MarkUp

June, 2007

Exclusive Preview:

Streets of Pavilion City

Plus:
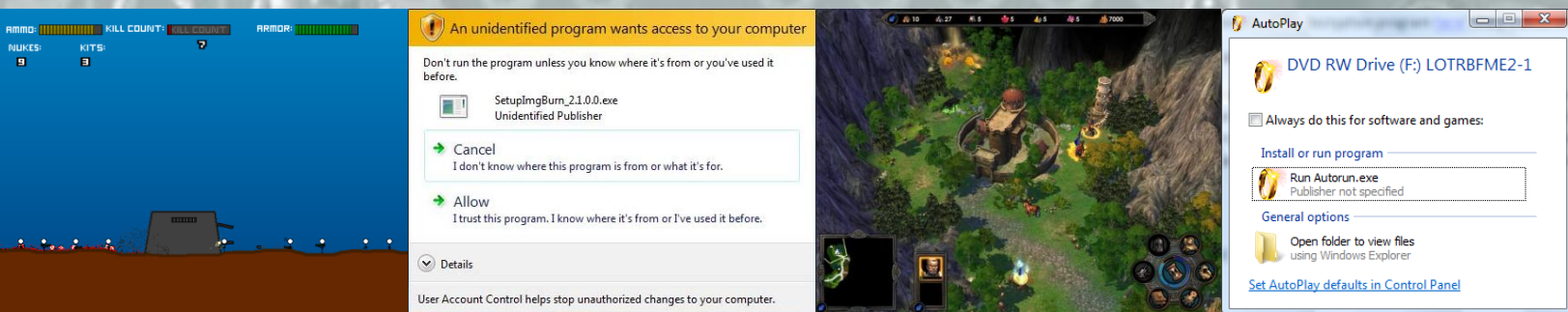
And...CSV: Extreme Data Storage; Effective Screenshots

Teamwork – Part 1 of 2

It's unavoidable, most games need more than one person to work on them, and you're going to need to work like a team, on a timeline, on a budget to get it done. (**Editor's Note:** Hmm... sounds like MarkUp ☺ **)**

A lot of teams involve people who aren't local; the only way to connect is via cyberspace. It's a challenge to keep these kinds of teams motivated, to keep the challenged, and to get them all on MSN at once!

I've has some experience working in these kinds of environments, and I'm going to share some of it with you. But be warned, it's not all going to work for you; everyone has different ideas and different ways of getting things done, but these tools should help to get your team all on one page.

Live Meetings

There are a lot of different ways your team can meet live. You'll probably decide on whatever the majority of your team prefers. Some of the solutions we use at marking include...

Skype
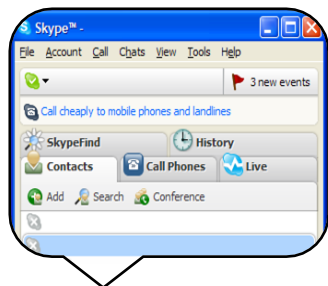
Skype (skype.com) is a free user-to-user high-quality telephone service for Windows, Mac and Linux that also supports dialling to hard phones for a fee.

Windows Live! Messenger

WLM (messenger.msn.com) is one of the most popular IM clients. It has chat, voice, video and file sharing functionality. The latest version also includes technology Microsoft recently acquired from FolderShare.com (in typical Redmond naming genius now called "Sharing Folders"; the FolderShare application is still available separately for Windows and Mac, but isn't compatible with the WLM version) that allows people to share folders with their contacts.

Internet Relay Chat

IRC is another popular way to handle team meetings, especially if you have a large team. IRC can handle hundreds of simultaneous users (the #ubuntu channel on freenode is often over 1,000 strong).

Creating a channel for your team on a server like irc.gamemaking.org (a free service from the kind, generous people who bring you MarkUp) is a quick way to get your team together. (For IRC usage info, see gmking.org/irc)

See you next month for part 2!
Robin Monks

■

Eh?

Throughout this issue, you'll notice two new signs at the ends of articles:

↻ & ■

These two new symbols will guide you through the articles, the circling arrow means the article continues on the next page, the square means the article ends.

Contributors This Issue

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Game Maker 7 Resources

There are millions of resources everywhere you turn. But how do you pick the good ones from the bad? Well over the past 3 years I have seen hundreds of resourceful websites through my website GameMakerResource. Now it's time for me to share with you some of the best resource sites out there. Today I'm going to look at Sprites and Sprite Sheets.

Spriters Resource

http://www.spriters-resource.com/

When it comes to fan-based sprites this website has it covered. From Sonic, Megaman, Mario to Final Fantasy, Ecco the Dolphin or anything in between it's all here. It not only has full character sets (and when I say full, I mean full!) it also contains backgrounds for some of the games. If you want to make a remake, then before you go elsewhere check out this resource.

GTA/GTA London Cars

azz.gouranga.com/carmanager/cars.shtml

Need car sprites? Look no further than this site. It literally has thousands of user submitted car sprites. I'm not just talking GTA rips either; these are all custom GTA style sprites. There are some fairly average cars in the collection and it can be hard to search through all the cars for a particular model, however if you start browsing from about page 80 and work your way upwards you will find some really good car sprites.

Sprite Database

http://sdb.drshnaps.com/

Couldn't find what you want at Spriters Resource? Not a problem, Sprite Database may have what you want. With thousands of sprite sets organized by their game name, it is easy to find what you are looking for. The sprite quality overall isn't as good as the Spriters Resource, but there are still plenty of good ones on there. It doesn't have many sprites of the "big games" like Mario and Sonic, although it does

have a lot of sprites for the smaller games. Well worth checking out.

Conclusion

Remember if you use ANY sprites from ANY resource to give credit to the creator as they took the time to rip/draw it. A lot of sprite sheets will have the creator's details on them, although some sites like GTA/GTA London Sprites just have the creator written next to where you download the sprite.

If you couldn't find what you want from these sites or you want other resources there is a good collection at GameMakerResource.com – The number 1 resource for Game Maker users. If you would like us to write about your site all you have to do is add your site to GameMakerResource.com and if we find your website useful we may write about it!

Jason Stockton

■

Don't Forget!

MarkUp is written completely by YOUR donations of content, without people like you donating content, MarkUp would be a very sorrowful sight. Donate today by emailing robin @ gmking . org with your articles and proposals!

var and globalvar

`var` and `globalvar` are both keywords that deal with creating variables. The `var` keyword has been in Game Maker for quite some time, the `globalvar` keyword was added in version 7.0. This short tutorial will explain how to use them and their advantages.

The var keyword

The `var` keyword declares a temporary variable. It can be used like this:

```
var variable;
```

This piece of code declares a temporary variable with name variable. There's an important remark here: the variable is declared now, but you cannot retrieve its value. This will throw an error. That's quite logical, since it doesn't have a value yet. Let's set it to 5:

```
variable=5;
```

`variable` is now set to 5. It is a temporary variable, but how long is it available?

- When it is declared in a piece of code: it only exists in that piece of code. Suppose you have two "Execute a piece of code" actions in the Create Event. You declare a temporary variable in the first action. Then it is no longer available in the second action!
- When it is declared in a script: it exists until the script ends (meaning after all code is executed or when a `return` keyword is reached).

Multiple temporary variables can also be declared by separating them by comma's:

```
var variable1, variable2,
other_variable;
```

This piece of code declares 3 temporary variables: `variable1`, `variable2` and `other_variable` in one line of code. Note that temporary variables declared with the `var` keyword are always local variables. You can even interpret this as "variables local to the piece of code they were declared in".

The `var` keyword can be used to create temporary variables. This has some advantages:

- Scripts with temporary variables leave no mess. If you don't declare the variables as temporary, they will still exist after the script is run. They then are local variables of the instance that called the script.
- For loops declare a variable in the first part of the statement:

↻

My game and User Account Control (UAC)

Many of you might be afraid that Windows Vista's new feature: User Account Control might limit your game. And I'm here to break the myths and destroy the FUD.

Here's a screenshot of the User account control, courtesy of Paul Thurrott. This is one of many types of User Account control dialogues that appear in Windows Visa, and this is the type you see when running some Game Maker games.

First, why is this dialogue appearing? Well, because the GM executable is requesting administrative privileges. Once the "allow" button is pressed, not only will the executable be able to run with administrative privileges, but also run other programs with administrative privileges without another UAC dialogue.

This means that if your game executes background tasks, which themselves require administrative privileges, there should be no problem. The only

problem you will have is the original UAC dialogue appearing.

My only annoyance to Game Maker executables is the "unidentified publisher" appearing when the UAC dialogue appears. Curiously, Mark added a publisher and developer metadata to the created executables, but apparently, that's not what Vista reads! So you will always see unidentified publisher for your game.

On the upside, most programs also return "Unidentified Publisher", so that really doesn't mean your game would look unprofessional.

Eyas Sharaiha

■

var and globalvar

```
for(i=0;i<5;i+=1)
{
}
```

The piece of code initializes the variable i to be used in the for loop. A not so good thing is that the variable still exists after the for loop is executed, which might give unwanted results e.g. when you try to use the variable i in another event of the object that is run simultaneously. When you declare i as a temporary variable before the for loop, it won't cause any errors:

```
var i;
for(i=0;i<5;i+=1)
{
}
```

Much better. Why waste memory space for such variables anyway?

The globalvar keyword

The globalvar keyword declares a global variable. It can be used like this:

```
globalvar variable;
```

The piece of code declares a global variable with name variable. As with the **var** keyword, the value of the variable hasn't been set yet, so this will throw errors when asking for the variable's value.

Now where's the difference with defining global variables the usual way (e.g. "**global.variable=0;**")? When you define global variables by adding **global.** in front of the variable's name, you need to add **global.** in front of the variable's name each time you make changes to it. You don't need to do this when you declare the variable with **globalvar**. There is a small disadvantage to this, though. Suppose

you declare a global variable tmp by using **globalvar**:

```
globalvar tmp;
```

The variable can simply be changed by using e.g. the following piece of code:

```
tmp=5;
```

Notice that an object always changes the value of the global variable tmp with this piece of code. There is no way to use a local variable with a name tmp anymore. An important thing is that these variables now can be used as GM's built-in global variables e.g. score, lives, room,… Indeed: although these variables are global, there's no need to add **global.** in front of their name to change them.

As with **var**, multiple global variables can be declared with **globalvar**:

```
globalvar var1, var2, var3,
other_var;
```

This piece of code declares 4 global variables: var1, var2, var3 and other_var.

Personally, I don't think **globalvar** has many advantages. Although there is one: you don't need to type **global.** in front of the variable's name anymore. And of course there is also the resemblance with GM's built-in global variables.

Voilà, that's all for now. I hope this tutorial has shown you the differences between **globalvar** and **var** and the advantages of using them.

Bart Teunis
■

How to make a good FPS

TUNTIS' RANT

Probably everybody has played Quake, Unreal Tournament, Half-Life or some other top-selling first person shooter. They can be really "cool", but nowadays the quality's just dropping underground and I shall list the reasons why:

Nothing new. Deathmatch is still fun, but it's starting to lose it's value (especially if the game only consists of that). Bullet-time is starting to be in every game, which is however *bad*. It's being overused.

No story. Most of the new FPS shooters don't concentrate on a story you could actually call "worth playing". Any kind of a story would be nice, but just plain "Oh noes, there are evil space aliens. Kill all."

doesn't work.

Graphics. Graphics are becoming a new "quality filter" for all games, and some FPS'es are actually just concentrating on the graphics rather than gameplay or story!

Gameplay. See also "1. Nothing new". You could add real weapons that are commonly used in games, but that won't just cut it. You'll have to invent something that'll make the game more exciting.

I could list more, but I hope that you got the point already.

Veeti Paananen
■

Script of the Month

I've chosen this script to be script of the month due its usefulness and efficiency. It is a string manipulation function, something we've always seen in PHP and lacked in Game Maker. Ladies and gentlemen, I present to you:

Explode String

```
/*
**  Usage:
**      size = explode_string(array,sep,data);
**
**  Arguments:
**      array       name of a local array,
**                  string
**      sep         seperator character, string
**      data        array data, string
**
**  Returns:
**      size        size of the array of data
**
**  Notes:
**      Converts a string of data with elements
**      separated by a delimiter into an array
**      of strings.
**
**  GMLscripts.com
*/
var arr,sep,dat,len,ind,pos;
arr = argument0;
sep = argument1;
dat = argument2 + sep;
len = string_length(sep);
ind = 0;
repeat (string_count(sep,dat)) {
    pos = string_pos(sep,dat)-1;
    variable_local_array_set(arr,ind,
        string_copy(dat,1,pos));
    dat = string_delete(dat,1,pos+len)
    ind += 1;
}
return ind;
```

The explode string function separates the input string into several strings in an array according to a given separator. For example, "Hello!My!Name!Is!Eyas" could be used as the argument and separated by the separator "!" to form 5 arrays: "Hello", "My", "Name", "Is", and "Eyas".

The title of the array input should be in the form of a string, and will be a local array. If you want it to be a global

array, you shouldn't add "global." before the array string, but rather change the scripts "variable_local_array_set" function to "variable_global_array_set".

Use

If you want to see an example on the use of the explode_string function, then you should read the "CSV: Extreme Data Storage" article, in this issue of MarkUp magazine.

Going further

There are some additional scripts you can use to handle CSV content available from GMLscripts.com, here are some examples:

explode_string_global

Creates a global array of strings from data in a given string using a given separator as a delimiter.
http://www.gmlscripts.com/script/explode_string_global

explode_real

Creates a local array of reals from data in a given string using a given separator as a delimiter.
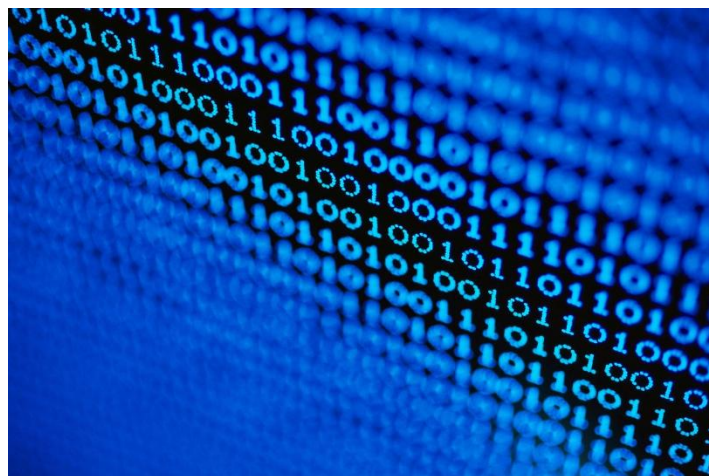http://www.gmlscripts.com/script/explode_real

explode_real_global

Creates a global array of reals from data in a given string using a given seperator as a delimiter.
http://www.gmlscripts.com/script/explode_real_global

Eyas Sharaiha

∎

CSV: Extreme Data Storage

In the previous issue, we covered two efficient data storage formats: XML and INI. Now, I am going to present to you another great data storage technique: CSV.

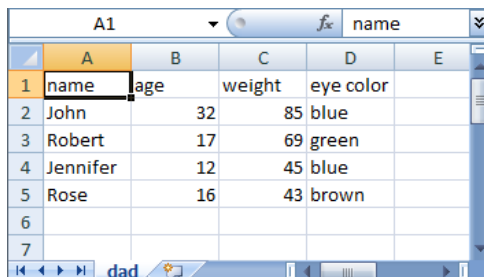CSV stands for "Comma Separated Values", and normal CSV file would look something like this:

```
name,age,weight,eye color
John,32,85,blue
Robert,17,69,green
Jennifer,12,45,blue
Rose,16,43,brown
```

If you save a file containing these values as a *.csv file and try to open it with a spreadsheet software like Microsoft Office Excel, you'll see something like this:

Microsoft Excel could also save *.csv files in a different format, in which fields are separated with tabs instead of commas. There is really no difference, except it is nicer to view in notepad.

Format

So, csv fields are separated by commas, and csv rows are separated by different lines. This format makes one thing very clear: "table" data could be stored in CSV files.

Tables are a much more efficient form of data storage for many things – but not everything. You can't store normal settings in tables and expect it to be size- and time- efficient.

Data Storage

The type of data to by store in tables should have:

a) Common fields
b) Different rows

As seen in the figure above, the same type of data, for different people is stored. This makes it easy to insert, manipulate, and read data, in an EXTREMELY storage-friendly method.

For example, I once helped someone to work on a Pokémon battle system, and part of that was to store information about 368 (not sure about the exact number) different Pokémon. That clearly couldn't have been done in an array nor a ds_list (possible, but again, not practical).

Instead, I simply created a .csv file, opened it in Microsoft Excel, and imported a table from a site I found on the internet, to excel itself! It is a very easy process, and very quick. Didn't take anywhere near the time that someone would expect toenter 368 different rows, with more than 10 fields each!

Reading Data

So we covered how good CSV is, and some might even think it's too good to be true. But, it isn't. There's one huge problem that us Game Maker users would face with CSV: Game Maker doesn't traditionally support it!

Yes, you read that right: you will have to write your own scripts to read from CSV. Good news is, it isn't that hard if you're experienced with file handling functions.

Understanding Data

To be able to actually allow your program to understand the different parts of the data, you need to separate it. Then, you have two choices:

1) Parse the entire CSV table to an array at runtime
2) Pick the wanted row, parse it, and only return the needed variable

Now, each one of these has its own advantages and disadvantages.

Parsing entire table

This includes reading the whole table, and parsing every row, and storing all these rows in a two-dimensional array.

As an individual script, this certainly takes more time to execute than the other option; however, it makes the data already available, which means it will save more time in the long term, when it might be needed to constantly keep reading the data.

This means that the actual script will only be executed once, and then all the data could be taken directly from an array.

Okay, so that's nice. But the problem is, if you're thinking about importing a large CSV table, like the one I had to import for the battle system, and then it'd occupy too much memory space. Something that is usually not preferred.

CSV: Extreme Data Storage

So, to sum it up:

- ✓ Only one initialization
- ✓ Data readily available
- ✓ Saves time
- ✗ Occupies too much space

Going directly to needed row

Going directly to a certain row includes **skipping** multiple rows and until the needed row is reached. That row alone is read, parsed, and only the needed variable (or variables) are saved. Others are in a temporary string, which is then emptied.

Since only one row is read, this method is obviously **much** faster, since it only reads the needed piece of data. However, in the long run, this script needs to be run multiple times to read all the needed data.

For me, 368 rows if information was too much! And only a couple of these rows would be needed, as only a couple of monsters would be fighting, the rest is simply: useless.

To sum it up:

- ✓ Quick execution
- ✓ Saves memory
- ✓ Only needed data is imported
- ✗ Might need to be executed multiple times.

Programming your method of choice

Before going into much detail, let's talk about how the program will be able to separate values into different variables.

1) Separating different lines, using the file_text_readln function
2) Separating values between commas, a new script?

So, how do we separate values between commas? That sounds a bit difficult, doesn't it? It might be, but fear not, as our **script of the month** for this issue, powered by **GMLscripts.com** does just that!

The function is called "explode_string", and has been really needed in Game Maker for quite some time. The function already exists in many languages, namely PHP.

The explode_string function will separate values between commas to an array, which name is given as a string argument. Read this issue's script of the month for the script and more information.

Parsing entire table

What the script basically does is in Script A below.

Notice a "REPEAT" loop exists inside the "WHILE" loop. This actually slows the execution pretty much, which shouldn't be a problem since the script is only called once, supposedly upon loading.

That repeat loop actually moves the exploded string to a 2D-array. If you really care about making the game extra-fast for some reason, then you could edit the "explode_string" script to use a "variable_local_array_set2" function instead of "variable_local_array_set". This makes a 2d array. Of course, in that case, you need provide an argument for the other axis as well.

Going directly to needed row

As you probably would have predicted, this script uses the ROW NUMBER to navigate to that particular row. The problem is, a ROW NUMBER would vary to a person's own thoughts. For example, is the first row of a CSV file numbered "0" or "1"?

We'll assume it is 0, the script we use is Script B.

In this case, the array returned would be a one-dimensional array, which index [n] varies with the order of the field within that row.

Script A: Parsing entire table

```
//argument0: file
//argument1: array
FILE=file_text_open_read(argument0);
index_row=0;
index_field=0;
while(file_text_eof(FILE)==false)
{
 temp1=file_text_read_string(FILE); //reads a single line
 explode_string("temp2",temp1,",");
 repeat(string_count(",",temp1)+1) //moves array to 2d array
 {
  //this function could be omitted
  //for a minor script edit
  VAL=variable_local_array_get("temp2",index_field);
  variable_local_array2_set(argument1,index_row,index_field,VAL);
  index_field+=1;
 }
 index_field=0;
 index_row+=1;
}
file_text_close(FILE);
```

CSV: Extreme Data Storage

Conclusion

CSV is an extremely efficient method of storage; however, you should know what you are storing. Sometimes, INI and XML would be obviously better candidates than CSV.

However, my own advice is: anything that could be stored in a table, and is hard to include as an array, is an excellent choice.

I hope you have benefited at least a bit from this article, and I hope I'll see some more complex games in the future which depend on CSV storage.

Eyas Sharaiha ■

Script B: Going directly to needed row

```
//argument0: file
//argument1: row
//argument2: array
FILE=file_text_open_read(argument0);
repeat(argument1)
{
  file_text_readln(FILE);
}
explode_string(argument2,file_text_read_string(FILE),",");
file_text_close(FILE);
```
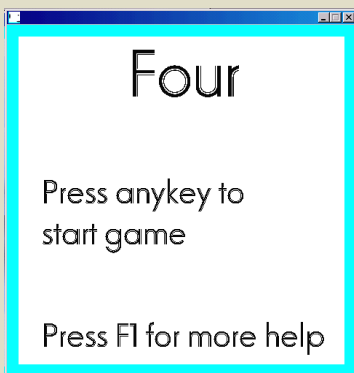
Effective Screenshots

You may feel that taking a screenshot is easy, and indeed it is, but a lot of the screenshots I see promoting games at the GMC and on sites devoted to Game Maker games fail to follow even the simplest of rules to make your screenshot effective.

There are a number of factors determining the effectiveness of a screenshot, of which the contents of the picture is just one.

I have seen countless games advertised with a screenshot of the game's menu. The game's menu for heaven's sake. These 'Game Maker teams', as they are often called are meant to be encouraging you to download their game, not a freaking menu.

Taking screenshots of the first level or first stage of game won't be produce a good preview either. Often many of the features offered in a game won't be available at this early point so any screenshots taken here won't be exciting or showcase many of the programs features.

Once you've found the right time and place to take a screenshot you also need to consider how you are going to take it. There are lots of freeware programs out there which offer screenshot features however you don't need any of them!

Taking a basic screenshot is simple, just press the [Prt Scr] key on your keyboard (above [Insert]) and paste into any graphics editor or even other software such as Word. However this probably isn't the best choice for taking your screenshots unless your game runs in full screen and at a decent resolution as otherwise you will have to crop your screenshot down so only the active game window is visible.

Fortunately there is a very simple solution at hand which doesn't involve

downloading any additional software or any extra work on your behalf. Instead of pressing just the [Prt Scr] key press [Prt Scr] along with [Alt]. This takes a screenshot of just the active window. Open up your graphics program and paste, no more cropping away of your desktop!

The power of an effective screenshot is unbelievable and should not be underestimated, although of course a good screenshot cannot make up for a poorly scripted and spirited game.

Phil Gamble,
http://gamemakerblog.com

Links

- gmb article: What format should I save my screenshot as?
- Screenshot tutorial

Four

Press anykey to start game

Press F1 for more help

An example of a pointless screenshot found on the GMC

Streets of Pavilion City EXCLUSIVE PREVIEW

Known in the Game Maker Community just as **Speedmaster**, Fionn Hodgson has been working hard on a game that is more than just another GTA clone – Streets of Pavilion City.

We'll go through the details of the game later on in the article, but first, some general information about the game. Pavilion City is set in England (the city is based on Brighton, a factual city in England) around the year 2015; and, like most Game Maker games, Pavilion City is free.

The game is made with Game Maker 7 so therefore it runs on Windows Vista, XP, and 2000. And I'm being told it has an 'infinite amount of customizable cheats'.

The game is made by "Speedmaster Games", and it already has a site dedicated to it at: pavilioncity.co.nr .

First look

The game is still under heavy development, and hasn't even reached beta yet – so the noticeable errors here are very much excusable.

I have only come across a **few** errors, all of which are probably easy to fix.

What is complete

The city – Pavilion City – is basically complete. According to Fionn, landmarks and other big buildings *will* be added to the game. A basic yet nice and interesting pedestrian system has been added… and for me, I really enjoy killing them!

There already is a variety of weapons,

including different types of guns, etc. Sounds have been integrated, breaks, guns, the 'punch sound', police, and some other sounds. The police system right now is described as 'incomplete' right now… I don't know why; I like it!

There's also day and night, but there's no transition between them yet – its either day or night right now.

What is yet to come

Here's what should be done before we can actually see a public beta or the final release:

- More cars to be added
- Having missions
- Complete police with:
    - SWAT teams!
    - Royal Marines
- Landmarks of Brighton
- Traffic system
- Radio!
- Different handling for different types of cars
- Menu screen
- Load/Save ability

Precedent

Pavilion City is the successor to "The City of Pliston", another GTA-clone by Speedmaster Games. It had a few problems and glitches, as well as sticky movement, weird collision checking, and strange can movement/controls. Fionn tells me (and I've seen for myself) that this has all been fixed in Pavilion City. Not only that, but the game has also become much faster than

its predecessor.

Figure 1 - City of Pliston, Precedent of Pavilion City

The screenshot of the City of Pliston gives an impression of how the final version of Pavilion City might look like, after it is fleshed out.

Some weak points

I really like this game, as well as its predecessor. But still, even though collision with walls, buildings, and poles is said to have been fixed, I still find collision to be annoying to the maximum.
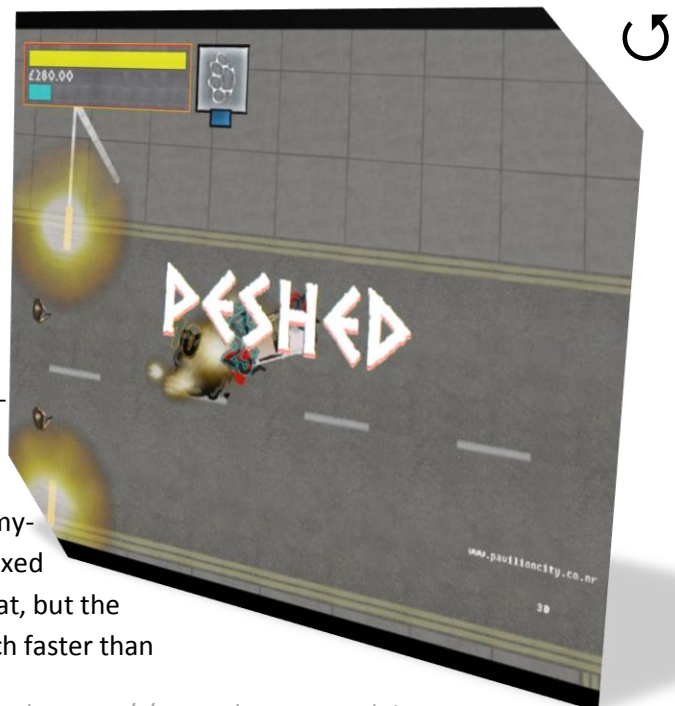
Streets of Pavilion City Cont.

The game is still early in development, so these comments would – hopefully – not apply to future releases.

So what is wrong with collisions now, you ask? Well, they're just too sticky! Here's a rule that should be **always** obeyed, whether we're talking about top-down games, 3D games, or any other type: smooth collisions! This means that if the player/car/object is not at a 90±30° (for a human) angle with the object/wall it is colliding with, it should move along the solid object in the direction nearest to its original direction of movement.
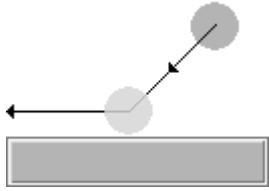
Figure 2 - What should happen

I might include an article about smooth collisions in future issues, but for now – check out Mark's 3D tutorial, as it contains smooth collisions – good ones.

Another weak point I've noticed is that the player is sometimes "flashing" – the player sometimes has part of it underground. It was just weird. But I'm sure THAT will be fixed soon.

Strong points

First, we finally have real 3D for buildings – if that didn't exist in a GTA clone, then it'd be really bad (most of the time), since one of the key features about the game play of GTA I and II is its top-down-3D feel.

The game will have great radio! It's true I haven't seen it yet, but it has been great in the City of Pliston – so if he's willing to make a better sequel, this one

should have better radio than before.

There's also police with decent AI, as well as a solid pedestrian system – that's one of the very difficult things to achieve in role playing games in general, especially GTA-like games.

I've also enjoyed the sound effects; they're all over the place! When you punch someone you hear some sounds, when you shoot you also get some good sound effects, the sound of the car engine while accelerating, and the sound of tires screeching as you go left and right... Great, just great!

The game also had a good design in general, such as the city, buildings, locations of cars, and more little nice stuff that you find here and there while playing the game.

Streets of Pavilion City Cont.

Radio

Though no radio functionality exists in the current version Fionn showed me, I'm told there will be 5 radio stations, each 6 minutes in length. Judging from his past game, the radio should be really good.

Radio channels include:

- A Talk Station
- An Underground Drum and Bass station
- A Dance Music station
- A Pop Music Station
- A Retro Station (With music from the 80s and 90s)

What's Next?

Here's what I know about the future of Pavilion City: it is going to be great. It'll be a very nice game, well done, enjoyable, and realistic. But that's just the future in the short term. No one really knows what the future holds in the long term for Fionn and his games, but he shared with me a couple of screenshots which I believe might be to your interest ☺.

Eyas Sharaiha

■

Falcon Squad: Beta 3

I'm really excited right now, because I'll be reviewing a beta of a game made by Game Maker **king** – and I'm not giving him that nickname, he deserved it when his game "Hover Tank 3D" won as the King of Cagematch in Week 100.

A GMC member and moderator, known as **FredFredrickson**, have released numerous games – and not one of them is low quality…or at least those made since 2005!

After making Hover Tank 3D, Martin focused more on multiplayer games, creating the now-popular **Reflect Account System** which most of my favorite multiplayer games use.

Of the multiplayer games is "Aces High Over Verlor Island", and excellent game that has gotten a positive reception from the community.

Now, Martin wants to impress us again with a new game in progress: **Falcon Squad**. If you've never heard of it, or never played it – PLEASE play it now!

Falcon Squad is still a work in progress, and Beta 3 of the game has recently been released.

What will not be rated

The game is a work in progress, and, even though I'm sure this game will already get a score higher than most complete games – even if judged as a complete game, I still won't treat it the same. The game is incomplete, and some things are yet to be added, these include:

- Music
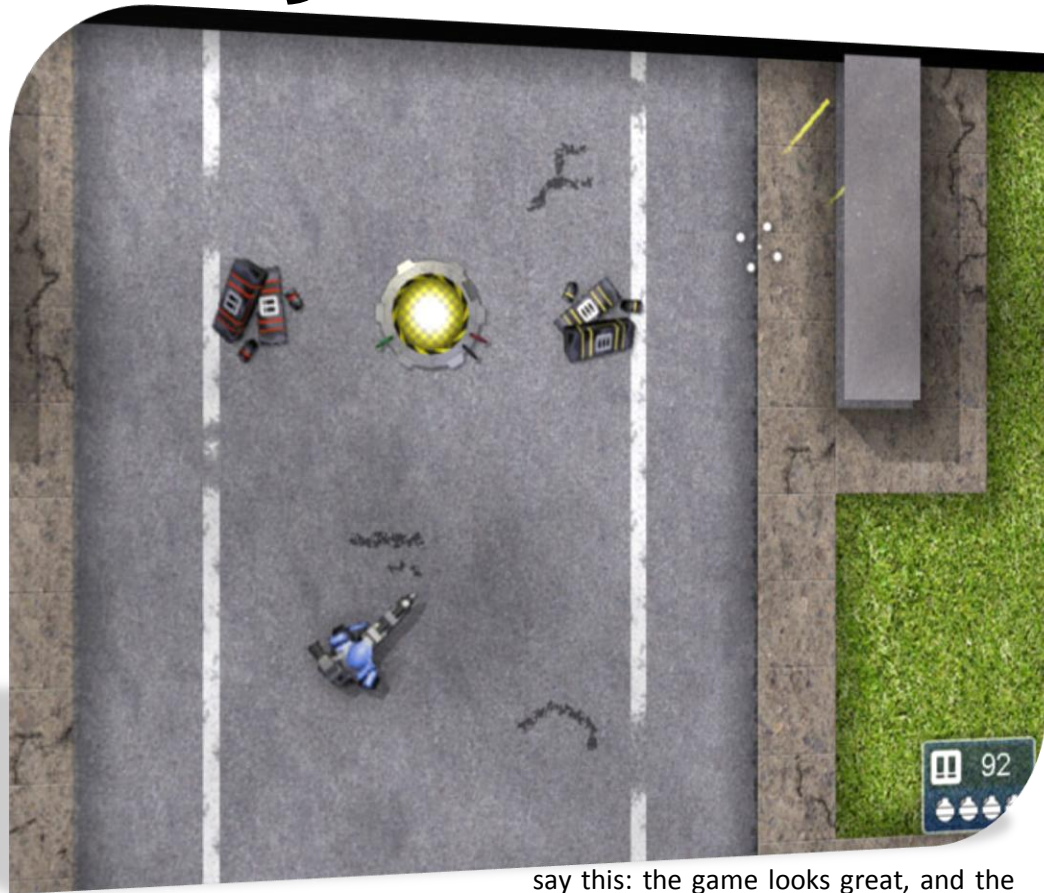
- Storyline (campaign is in the making, still)

Graphics

Look, just look! Look at the textures of the ground, at the trees and their smooth edges, and the water and its cool animation, and at your main player. All is extremely realistic, cool, and just plain awesome.

One thing that confused me is, to figure out whether or not is this game 3D! Looking at the walls and the player, it is – more or less. The game graphics are very realistic, yet they have some minor annoyances. For examples, trees are just 'floating clouds', and, and… that's pretty much it.

I'm having a hard time noticing bad things about the game graphics, but I'll say this: the game looks great, and the graphics have taken it to another level – but there's room for improvement. For instance, on my high resolution monitor, scaling 800x600 to a 1280x1024 display is not such a good idea. I don't know, maybe the more-common 1024x768 could be the actual view size? The graphics get **9** out of 10.

Graphic Effects

If a picture is worth a thousand words, then just take a look, because I have five thousand words for the game's graphical effects – and all are words of praise!

Flawless effects, utter detail! Blood spillage, explosions, smoke, bullets, lasers, and blood stains – all in one game! But not only that, there's also shadows for everything, lighting effects,

Falcon Squad: Beta 3 Cont.

and reflections – unbelievable!

The game's graphic effects have surpassed those of numerous commercial games. Simply put, "a work of art". I'd be crazy if I didn't give a rating of **10** to the game's graphical effects.

Sound Effects

Music in the game is far from complete, but the sound effects are another story. When you fire a machine gun, you hear a different sound than the one you hear from a shotgun. Each weapon has a unique sound effect for shooting, as well as refilling. Nothing is overused – each sound is used for a single weapon. Explosions are also great.

One thing I missed, though, was the detail. When someone plays a "FredFredrickson Game", this person would expect attention to utter detail, just like the graphics and graphic effects of the game.

I want to hear sounds of steps, and have different sounds when walking on grass and when walking on the street, for example. I'd like to hear sounds of people moaning and screaming when they are shot. I just want more detail!

The game gets **8** out of 10, excellent sound effects – just not the level of details I'm used to in these games.

Game Play – Controls

The one thing I HATE about the game is its controls. It might be just me, but I really prefer the GTA-style controls much more.

The controls are just too confusing; when I'm running away from someone else, I just start shooting in the other direction by mistake, for some reason!

Others might argue its better, and some will say that I just need to get used to it. That might be true, but the first time I got my hands on a GTA-like game, I didn't need to get used to it.

The problem isn't that the controls are weird, they're new – they're supposed to be weird! The problem is that they're just not easy. I didn't know whether to give the game a 7 or an 8, so I just gave it a **7.5**.

Game Play – Difficulty

The game's difficulty is one of the best things about it. Some games depend on luck, others depend on doing repetitive tasks, others just have the technique, but this – this game depends on what truly matters: skill.

You can't win if you're not skilled! You should have the technique, you should be quick to switch between weapons, you should be responsive, and you should be smart! Where to hide? Where to stand? Move away or move closely? Use a weak machine gun and shoot a lot of bullets, or use a powerful rocket launcher that is extremely slow?

If you know what to do, when to do it, and more importantly: how to do it, then you win. Otherwise, it means you don't have the skill yet.

10! Yes you heard me: 10!

Game Play – Atmosphere

The game is so positively realistic! You really feel like you're *in* the game; not because of the realistic graphics, sounds, or effects, but because of all of the components of the game interacting together to produce something really amazing.

It is not only about the presentation of the game that provides the atmosphere, but also the things you can do in a game. Like hide under a tree, or use a wall to shield you! The game gets **9** out of 10 in atmosphere, good job, really!

Overall Experience

This is only beta 3 we're seeing! I wonder how the game would look like when it is finished. I bet graphics and graphic effects, sounds, music, controls, and game design will all come together to deliver an awesome experience.
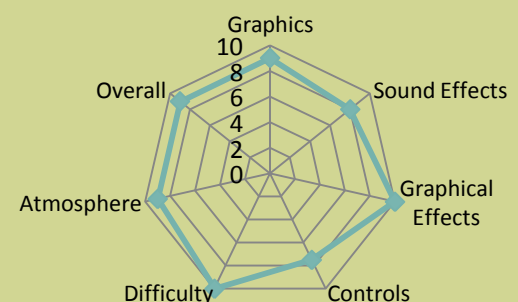
As for now, beta 3, the average of all of the game's ratings gives us a rating of **9** out of 10. Wow.

Get the game here:
gmc.yoyogames.com/?showtopic=297664

Eyas Sharaiha

■

Summary

Hard Hat III

The third issue of one of the iconic old-school-type Game Maker game series - Hard Hat 3, is still, to this day, largely popular amongst the Game Maker Community. With more that 6000+ downloads, this game blasts through every internet game download site. Unlike from previous titles, Hard Hat 3 is produced with class.

Game play: You play as a little mysterious character who can manage to shoot opponents and at the same time hide under his hat. Unbelievable, you will say? Then what would you think about Lava man, Plasma man and Halloween man? Eight different bosses and many well designed levels to beat. Great and customizable control system as well, with possibility to use your favorite gamepad. What else can you expect from a good game?


Graphics: If you would ask me, I'd say that some of characters and graphics I have seen somewhere else before, but still... That does not lower the overall texture and sprites quality. Everything is smooth and well enough to say it's perfect.

Sound: All sounds and music are in very good quality. You can hear a noise on every key press and action. On the whole aspect, music fits the in games atmosphere in a very fantastic manner. Even commercial games hardly ever have a sound system like that.
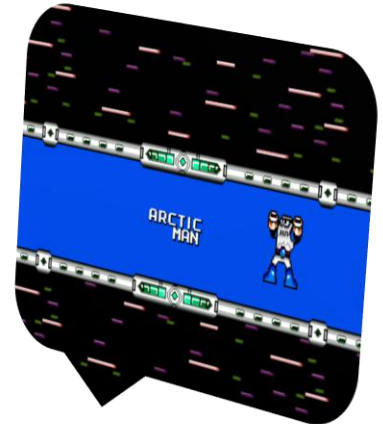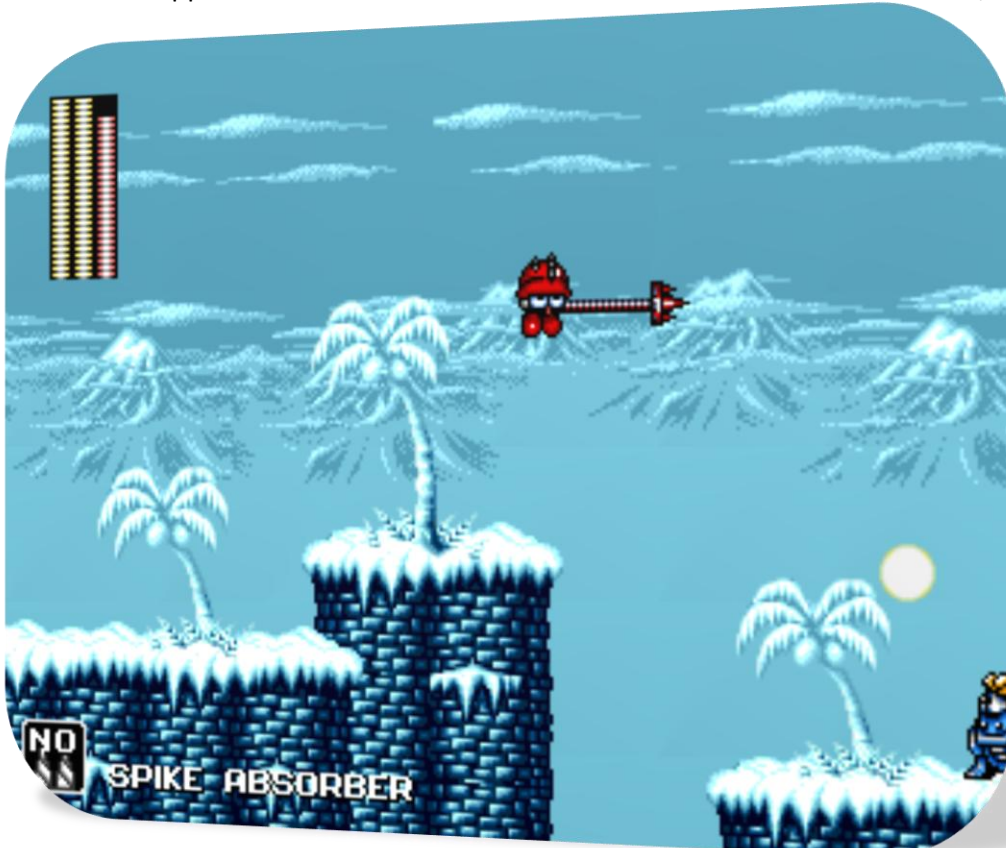
Conclusion: Like always Damaged had surprised us with even more professional looking game. A "must have" in every gamers collection.

Hart Hat 3, as well as the previous games in the Hard Hat franchise, is available at damagedgames.com.

Anonymous Contributor

Interview with Damaged about HH3

Back in the day when Damaged released "Hard Hat 3", I interviewed him to learn more about the old-school game legend. I've only recently dug out the interview, and decided to publish it (**Editor's Note**: we also have a review of HH3 on the previous page). There's still much that we could learn from it.

Hard Hat is one of the most downloaded games to date. What's the knack?

Well, actually, the game has been out for 2 years now and it is (so I've been told) one of (if not the) best mega man fan game ever. I take a lot of time to make sure the games are bug free and I study mega man. Also Mega Man 2 was the first video game I can recall playing, so it's been in my blood for a long time.

How did you come to decision to focus on retro style?

It wasn't actually the plan. Mega Man I think is the best series EVER! So I decided to make mega man fan games. Not to mention that my graphics were, well, um... lacking when I started out. And that's how I started. Then the style just became very popular and the old-school mega man fans came out of the woodwork and LOVED the series. Why stop when what I am doing is working?

For how long game making is your hobby and how did you started it?

I actually go to college studying programming. So I hope it becomes a job as well as a hobby. It started way back then in the days of Doom 2. All I really wanted to do was make my own level in Doom Cad. I was unsuccessful of course because Doom Cad was painful to work with. But it got me thinking; why not make my own games? So in 1997 I ventured into the programming world with apple soft basic. I programmed my first game, block man and I have been hooked ever since.

What can we expect in future?

Well, Hard Hat 4 at the very least. Then I have some ideas about squirrels with chainsaws and maybe another action shooter (kind of like contra). I haven't thought past Hard Hat 4 yet, but some people want to see a Hard Hat X series, so be on the lookout for that. Once I get my Calculus and Physics under my belt, I may venture into so 3d games too (C++ by then). Don't worry; www.damagedgames.com will keep you all up to date.

On a side note, I am also attempting to be funny with a Hard Hat comic, be sure to check that out: damagedgames.com/comic.html

Andreas
∎

Mad House, Mini Review

Ever wanted to feel like a dead man? Here's your chance! There are four dead characters for your pleasure – Butch, Zero, Bozo, and Rag Man, each with different skills, techniques, attitude and looks. Creepy monsters and wizards... Mad House has it all and much more.

Game play: Three different game types: story - single player battle through several breathtaking levels, versus - a split screen play between two players and netplay. Control system is nice and very easy to learn. There is possible cheating as well, in story mode using key-kombo's. In Mad House are various different weapons to choose from, collectable all around every stage. Each level contains hidden keys and many on other surprises.

Graphics: The classical 320x240 resolution with mid-high to high quality textures. The character animation and screen gamma effects are phenomenal. All of that makes you forget the simplicity of this game.

Sound: Scary music from good-old horror movies. Sound of your chainsaw when fighting opponents. Well, there's always more to add, but remember it is only a demo.

Conclusion: There are only some quality games today and Mad House is one of them.

∎

Forted

It's not often that I come across 'decent' games at the GMC. There are a lot of good efforts, but most releases leaving me wanting more - in a bad way. The number of games where the focus has all been on one aspect of the game is high. For example games with amazing unique graphics which are wasted on appalling gameplay.

Forted, a bunker defense game is an exception to this rule. This game has it all: a great idea, simple but adequate graphics, sound, easy gameplay and a number of features that appear later in the game to keep you playing. A highscore table makes the game addictive, as does the chance to choose how to upgrade your bunker.

Sure, this has all been seen before with the defend your castle (xrl.us/castle) game produced by xgenstudios, which interestingly I also compared Coffee

Lover Proction's trailer for Senseless War (xrl.us/senselesswar) to, but the concept was good and Micco (xrl.us/micco), the creator of Forted certainly hasn't produced a rip-off of defend your castle.
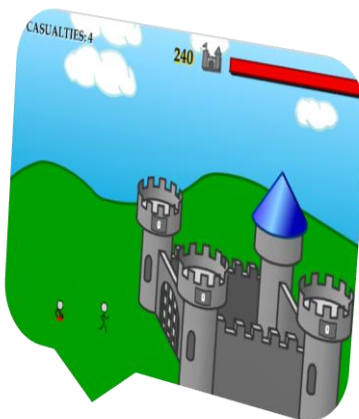
Defend your Castle

You control the guns of a military bunker in an area of open grassland, you are attacked by various soldiers from either side and from bombers,

fighters and helicopters from above. You have to work out how to best manage your resources which include when to reload, when to nuke and which upgrade option to choose after you have killed the next 100 soldiers.

Senseless War

Forted is an excellent example of the types of mini-games that can be produced with GameMaker and how a basic concept can quickly be built upon to build a more fulfilling and complete game.

No fancy 3D graphics or major soundtrack, and yes the game has its flaws - some of the text is a bit too small to read, and the colour changes of the sky are a bit dramatic - but an excellent and fun minigame! With a bit of tweaking here and there it could get my top rating. I'd give this game a 9/10, and I don't even give out high ratings or even any ratings often at all unless I think a game really deserves it.

Phil Gamble,

gamemakerblog.com

Get it now:

yoyogames.com/games/show/1151

Heroes of Might and Magic V

"Heroes of Might and Magic" was – and still is – one of the world's most famous turn base strategy games. It captured audiences of all kinds – whether fans from its first release or later in the series, expansions or just the basics. Overall, the game has never failed to get players addicted to its game play.

"Heroes of Might and Magic" is one of the most influential games played around the world and anyone who has ever played it has in some way admired it.

Taking place in medieval times, players control one of 6 armies:

1. Humans
2. Demons
3. Elves
4. Wizards
5. Dark Elves
6. Necromancers

In Heroes of Might and Magic V every player can hire heroes to control their armies. They can also protect their castles and build buildings to be able to hire creatures to build up his armies to conquer other nations whether controlled by the computer in single player mode or other players in Multiplayer mode.

Judging the game

Many non-commercial games are reviewed, and they often get many 10s and 9s when they are judged. If such a commercial game, with millions of dollars of investments, and dozens of dedicated programmers, modelers, designers, and composers was to be

judged by the same criteria, it would get all 10s, no question.

A game is judged by the resources its creator could have. So a commercial game by huge company and numerous employees has much higher – and, tougher – criteria to be judged upon.
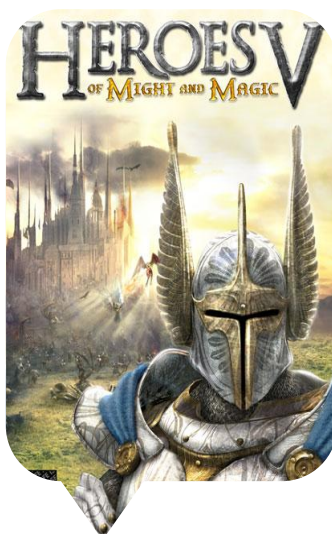
Graphics

The graphics have come a long way since its start of the series in 1995; they were enhanced, became 3D and textures became more real. But the problem is that it is not realistic, sizes are not rational and some are cartoonish (see screenshot above).

The graphics get 8 out of 10.

Game play

Game play is one of the aspects that depend on the audience, if you are into fantasy / strategy games this game is a must have, if you're not then you probably shouldn't get it.

It is an addictive game, even after beating every campaign and every scenario. You still have the feeling that

Heroes of Might and Magic V

you want to play the game because you will end up with different endings for all the scenarios depending on the difficulty and the race played.

For game play I give it a 10/10.

Sound Effects

As your heroes move around, monsters attack, it all has been very well designed into the game. At each step taken by the hero you hear their footsteps, they are suppose to sound; every swish of a sword, every explosion and every arrow sounds as if happening in front of you.

For sound effects I give it a 9/10.

Graphical effects

Lighting effects, reflections, explosions,

Summary

Retail Price: **$49.99**
Website: mightandmagicgame.com/HeroesV
Produced by: Ubisoft
System Requirements:
  Windows® 2000/XP
  Pentium® 4 or AMD Athlon 1.5 GHz or higher
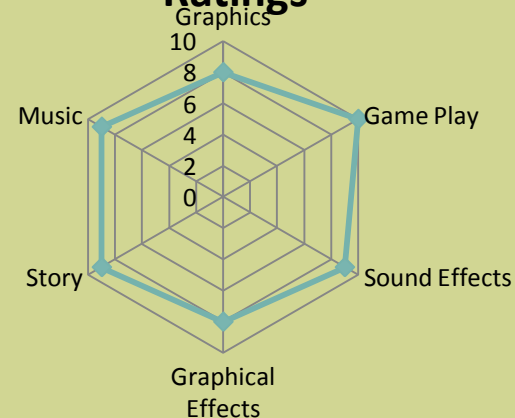 512MB RAM
  DirectX 9 (and 64MB RAM on GFX card)
  2GB Hard Drive space
  Broadband internet connection

Ratings

bolts, and all other similar things really show that the graphic designers have really worked hard on it, and in the end their work has paid off. The problem is that what was there was great but I would have liked more.

For graphical effects I give it an 8/10.

Story

The game's story in the campaign mode has a very good base, again it depends on your personal liking of fantasy; again, if you like fantasy the story is good but if you don't then probably it is not worth your money.

While in the scenario each map has its own story most are far before the campaign and somehow help your overall understanding of the story of the game.
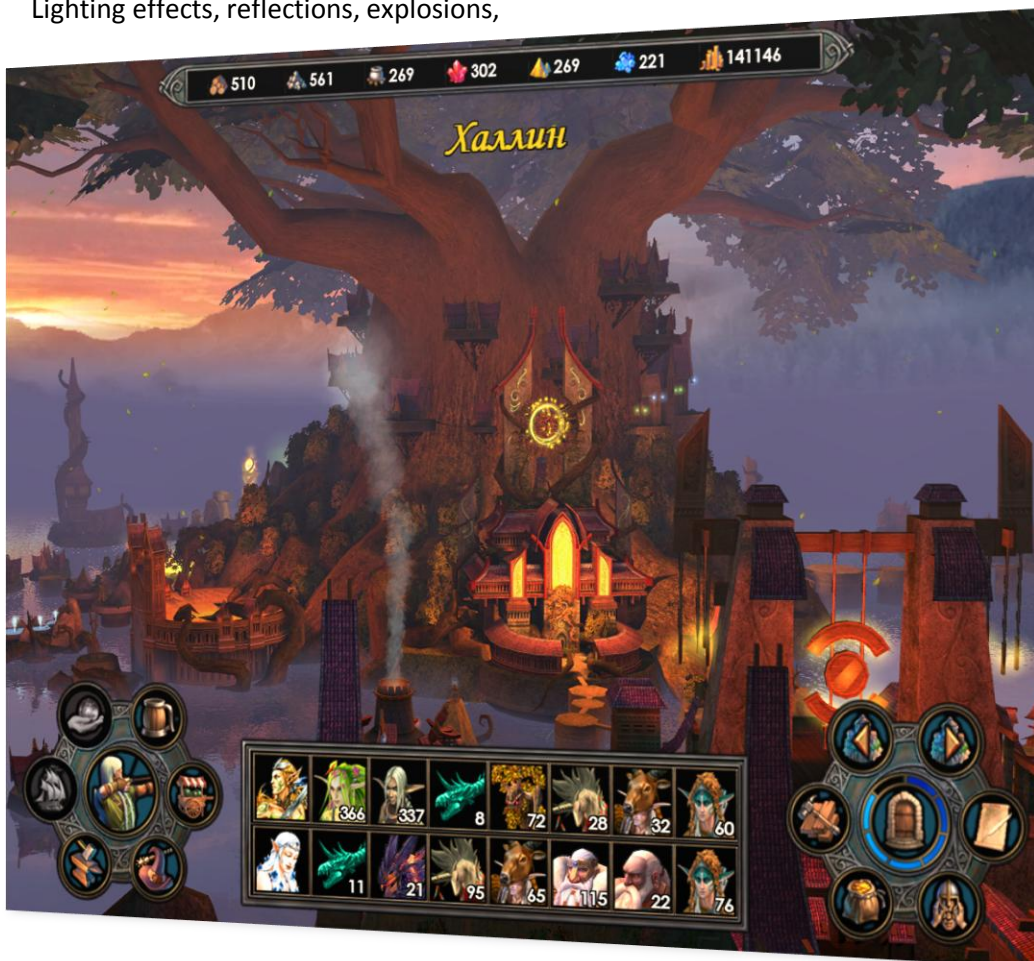
For story I give it a 9/10.

Music

The music in the game is calm outside the battle but exciting and stimulating inside the battle, not the best game music so far but it does fit in with the game.

For music I give at a 9/10.

Overall

So finally the overall rating of the game is 8.8/10!

Happy Gaming!
Michael Sharaiha

Advanced Sine and Cosine

To calculate every value of y where $y = \sin^{-1}(x)$ one normally must use two equations: $y = \sin^{-1}(x) + 2\pi n$ and $y = \sin^{-1}_1(x) + 2\pi n$. However, to define a set of all solutions of $\sin^{-1}(x)$, it would be convenient to express $\sin^{-1}(x)$ as one equation $f(x)_n$ where x is the value for which we wish to know the arcsine and n is the integral index at which the element we wish to know resides in the solution set for the arcsine of x. For example: $f(\frac{1}{2})_0 = {}^{\pi}/_6$ and $f(\frac{1}{2})_1 = {}^{5\pi}/_6$. This is, as we shall see, is quite easily possible if we only know the primary arcsine of x.

Mathematics

To begin the search for such a formula, it is readily apparent that we must first know two things: the primary arcsine of our value, that is, $\sin^{-1}(x)_0$ (returnable by any calculator) and the secondary arcsine, based off of π radians (or in the case of the similar cosine function, 2π radians). Once we know both of these values we can simply calculate by adding the primary arcsine, then adding the difference between the secondary arcsine and primary arcsine, then 2π minus that difference… etc. n times. We must first find the secondary arcsine

which is accomplished quite simply by subtracting the primary arcsine from π radians.

$$\therefore \ \sin^{-1}_1(x) = \pi - \sin^{-1}(x)$$

To find the distance between the primary and secondary arcsines, we simply subtract the primary arcsine from the secondary arcsine found above,

$$\Delta^1[\sin^{-1}](x) = -\sin^{-1}(x) + \pi - \sin^{-1}(x)$$

$$\therefore \ \Delta^1[\sin^{-1}](x) = -2\sin^{-1}(x) + \pi$$

We can now attempt to construct our formula; we now know that we must first add the primary arcsine:

$$f(x)_n = \sin^{-1}(x)$$

Followed by the difference between the two n times plus πn to bring our tally around to the opposite side of the circle (and within a known distance of the next solution):

$$f(x)_n = \sin^{-1}(x) + n(-2\sin^{-1}(x) + \pi)$$

Now the tricky part starts, we have to add a certain offset only for every other value of n. Let me explain, we can see that the function above will work fine for the first two values of

the arcsine, for the first element of the set at index 0, $\sin^{-1}(x)$ will be returned. For the second index, 1, the second value will be returned. However, for the next index we fall short some value, then for the next we fall short that value again. Then, for the next index, we fall short 2 times that value, and so on and so forth as seen in the following tables:

$\sin^{-1}(^{\sqrt{2}}/_2)$	$f(^{\sqrt{2}}/_2)_n$	Δ
$^{\pi}/_4$	$^{\pi}/_4$	0
$^{3\pi}/_4$	$^{3\pi}/_4$	0
$^{9\pi}/_4$	$^{5\pi}/_4$	π
$^{11\pi}/_4$	$^{7\pi}/_4$	π
$^{17\pi}/_4$	$^{9\pi}/_4$	2π
$^{19\pi}/_4$	$^{11\pi}/_4$	2π

$\sin^{-1}(^{1}/_2)$	$f(^{1}/_2)_n$	Δ
$^{\pi}/_6$	$^{\pi}/_6$	0
$^{5\pi}/_6$	$^{5\pi}/_6$	0
$^{13\pi}/_6$	$^{3\pi}/_2$	$^{2\pi}/_3$
$^{17\pi}/_6$	$^{13\pi}/_6$	$^{2\pi}/_3$
$^{25\pi}/_6$	$^{17\pi}/_6$	$^{4\pi}/_3$
$^{29\pi}/_6$	$^{7\pi}/_2$	$^{4\pi}/_3$

↻

Advanced Sine and Cosine Cont.

As we can see, our values are a little off; to compensate, we must add a certain amount defined by:

$\lfloor^n/_2\rfloor(((2\pi+\sin^{-1}(x))-(-\sin^{-1}(x)+\pi))-(-2\sin^{-1}(x)+\pi))$

In this above statement we can see that both the secondary arcsine and Δ^1[arcsine] values are present. This makes the final equation:

$f(x)_n = \sin^{-1}(x) + n(-2\sin^{-1}(x) + \pi)+$
$\lfloor^n/_2\rfloor(((2\pi+\sin^{-1}(x))-(-\sin^{-1}(x)+\pi))-(-2\sin^{-1}(x)+\pi))$

Which can be simplified:

$f(x)_n = \sin^{-1}(x) - 2n\sin^{-1}(x) + \pi n + \lfloor^n/_2\rfloor(2\pi + \sin^{-1}(x) + \sin^{-1}(x) - \pi + 2\sin^{-1}(x) - \pi)$

$f(x)_n = \sin^{-1}(x) - 2n\sin^{-1}(x) + \pi n + \lfloor^n/_2\rfloor(4\sin^{-1}(x))$

This can of course be used for degree values simply by changing π^c to 180°.

Cosine and Arccosine

This formula can also be applied to the arccosine, function (and other trigonometric functions, however only sine and cosine are detailed here); however, several small modifications are in order. First all arcsine functions must be replaced by arccosine functions, and all π changed to 2π, this results in the final equation:
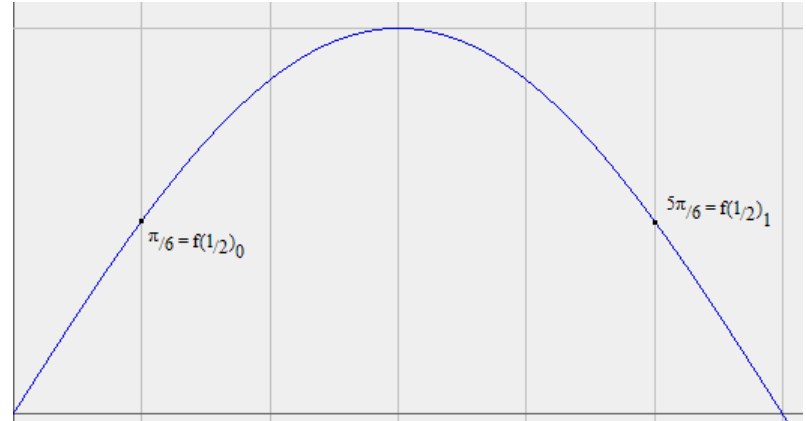

Graph of sin(x) with the first two solutions of $\sin^{-1}(½)$ labeled.

$g(x)_n = \cos^{-1}(x)+n(-2\cos^{-1}(x)+2\pi)+$
$\lfloor^n/_2\rfloor(((2\pi+\cos^{-1}(x))-(-\cos^{-1}(x)+2\pi))-(-2\cos^{-1}(x)+2\pi))$

Or:

$g(x)_n = \cos^{-1}(x)-2n\cos^{-1}(x)+2\pi n+\lfloor^n/_2\rfloor(4\cos^{-1}(x)-2\pi)$

Leif Greenman,
[*www.greenmangames.vze.com*](http://www.greenmangames.vze.com)

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EXAMPLE

Use in Game Maker

These are GM Scripts that use these functions:

acos

```
#define acos
//////////////////////////////////////
// acos by Leif902
// Calculates the arccosine of argument1
// for the argument0'th repetition.
//
// eg. acos(0,sqrt(2)/2) = pi / 4
//     acos(1,sqrt(2)/2) = (7 * pi) / 4
//     ... etc.
// All results are in radians
//////////////////////////////////////

var tVal;

tVal = arccos(argument1) + (-
2*argument0*arccos(argument1)) + (2*pi*argument0) +
(floor(argument0/2)*(4*arccos(argument1)+(-2*pi)));

return ( tVal );
```

asin

```
#define asin
//////////////////////////////////////
// asin by Leif902
// Calculates the arcsine of argument1
// for the argument0'th repetition.
//
// eg. asin(0,sqrt(2)/2) = pi / 4
//     asin(1,sqrt(2)/2) = (3 * pi) / 4
//     ... etc.
// All results are in radians
//////////////////////////////////////

var tVal;

tVal = arcsin(argument1) - ( 2 * argument0 *
arcsin(argument1) ) + ( pi * argument0 ) + ( floor(
argument0 / 2 ) * 4 * arcsin(argument1) );

return ( tVal );
```

Game Maker 7 Tips: Distribution

Including Files

Registered: Yes

Do you want to keep your included files away from hackers? When including a file, instead of just locating your file and pressing OK, under 'Export', select 'Export to Temporary Folder'. When you need your file, use this as the filename:

```
string(temp_directory)+'/filename'
```

Using this, your would-be hackers will not find your important files under the game's working directory like they are by default.

Encryption/Decryption

Registered: Sometimes

Another part of safety is instead of just exporting the files to a safe spot, encrypting them. There are plenty of DLLs and scripts out there to do that.

I created an example and encrypted 'Hello there! Can you read this?', and my program spat out '>ÜNj¶Œ•.hŠ-¡áⱭ r+ãåx"9~ß Unless your hackers are Borg, it will take them a long time to decode that. What about encrypting programs with thousands of lines of code? Encryption DLLs and Scripts come with ways to decrypt the files, so your program can use them.

If you don't put the creators of the encryption on the credits with something like this: 'Encryption made by Bob. You can download the decryption program here', they'll understand.

Autorun

Registered: No

If you ever make a program that you wish to distribute on CD's, autorun may be useful. In fact, most game developing companies use it. Autorun runs a specified file when the CD is inserted, and can give the CD its own icon, along with a name. Just put this on your CD along with the game in the root directory with notepad (the *.exe must be in the root also, along with the icon, and name the file 'autorun.inf'):

```
[autorun]
open=(autorun file here)
Icon=(icon file here)
Name=(CD name here)
```

The downside of Autorun is that on Windows Vista it doesn't open automatically and opens of a box asking what to do (see screenshot).

Manuals

Registered: No

Like mentioned in our last issue, remember to *always* include a manual! In Word 2007, you can download an add-on that allows you to save the current document as a *.PDF or *.XPS. Or instead of using GM's built in help, have a room or two to display it. Read our last issue for more info.

Stephan
■
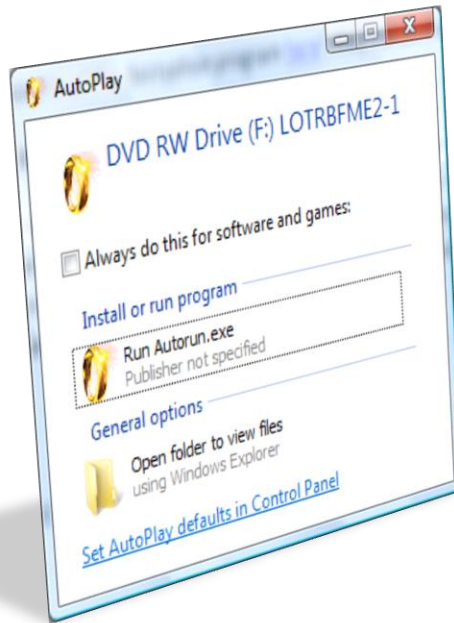
GMKing.org & Markup

I was asked to write about my experience with the GMKing community, me being a "full-time writer and; basically, one of the longest remaining non-staff members in the (yet small) community.

GMKing.org was originally a Game Maker only site, being called "GM6.info". That site had been running for a long time before I joined it. GM6 had its own IRC server and all too. Then the day came for it to get closed, and GMKing to be launched.

GMKing stands for "GameMaKing", as seen from the domain "gamemaking.org". The website was quickly set up with a forum, the IRC channel residing in DynastyNet (#gmking.org), months pass and it gets members, more material is contributed, but the forums remain overall small.

I don't really remember things so precisely, but about a year later GMKing gets its own IRC server (again). It seems to be slowly growing too, and I'm happy for it. I am saying this totally as my own opinion: I want people to join the community. Hard work is being wasted.

Your GM6 Games with Vista

In a post here (xrl.us/gm6vista), Mark Overmars posted the first Beta for a GM 6.x converter that converts Vista-incompatible games to Vista-compatible games.

The process is fairly simple, and it applies for GM6.1 and GM6.0 games. The game's old runner-data, which was previously incompatible with Windows Vista, is cut, and replaced by a new uncompressed runner.

Runner data exists for both 6.0 and 6.1, so no incompatibilities should occur while converting games. Others were also concerned whether or not will this conversion tool:

1- Break the EULA
2- Make it easier for hackers to decompile games

For both questions, I can safely say the answer is no. The Runner data for Game Maker 6.x used to be compressed using a software/library that is incompatible with Windows Vista. I haven't gotten it confirmed from Mark himself, but I'm told Game Maker 6.x uses "zlib" as the compression tool.

Anyways, the actual executable, which includes the 'compiled' source of a game is not compressed with zlib, only the runner data is. The runner is simply cut, and replaced with a 6.0 or 6.1 runner (according to the original game) that is not compressed, and so the game runs normally under Vista.

It doesn't bring the game one step easier to decompilers, as the source of a game remains intact and unmodified. Only the 'header' is changes to suit Vista.

To use the converter, either press the "Convert Game…" button and select the executable, or drag the game exe into the window. The game will automatically be converted to a Vista-compatible version without any message showing, and the original copy is saved under "game_orig.exe".

Anyone with Vista can either download a Vista-friendly GM6 game, or you can convert it yourself if the game hasn't already been converted. Have fun, and happy gaming!

Eyas Sharaiha

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GMKing.org & Markup

Tutorials and examples, some forum threads, all this could be a huge pile of useful material (not to mention GMPedia.org, the wiki). The wiki is fairly new, but has almost 400 articles, some of them being very "in-depth". I'm an active contributor in it myself. It's been inactive for a small amount of time now again, mainly due to lack of contributors (and even users).

Online promotion is a painful business, and an hard one: One just can't magically get members to join their community. I myself feel that GMKing has promoted itself sufficiently, but for some reason nobody joins. I want this fixed. Being part of this small community hasn't been a waste of time for me though: I've had lots of fun moments.
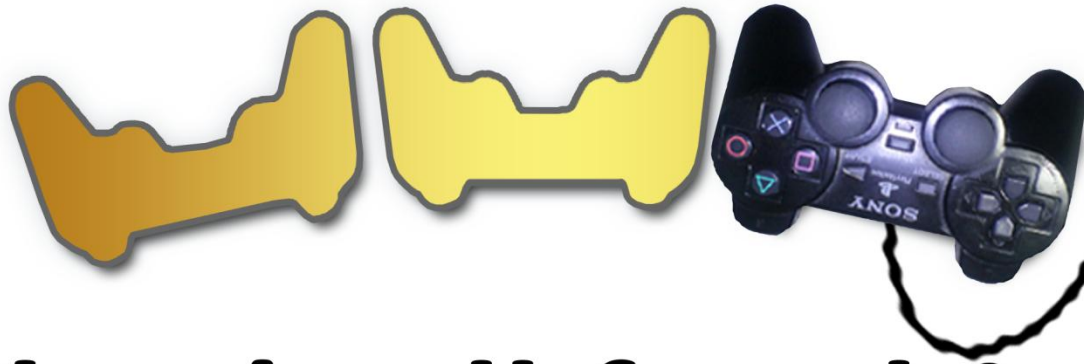
Be sure to join us in the irc server at irc.gamemaking.org, make at least a few contributions to GMPedia.org, and register at the GMKing.org site.

Come on out and support the community that spends their time keeping you informed with great resources like markup; join the forums, get on IRC and be a member of GMKing!
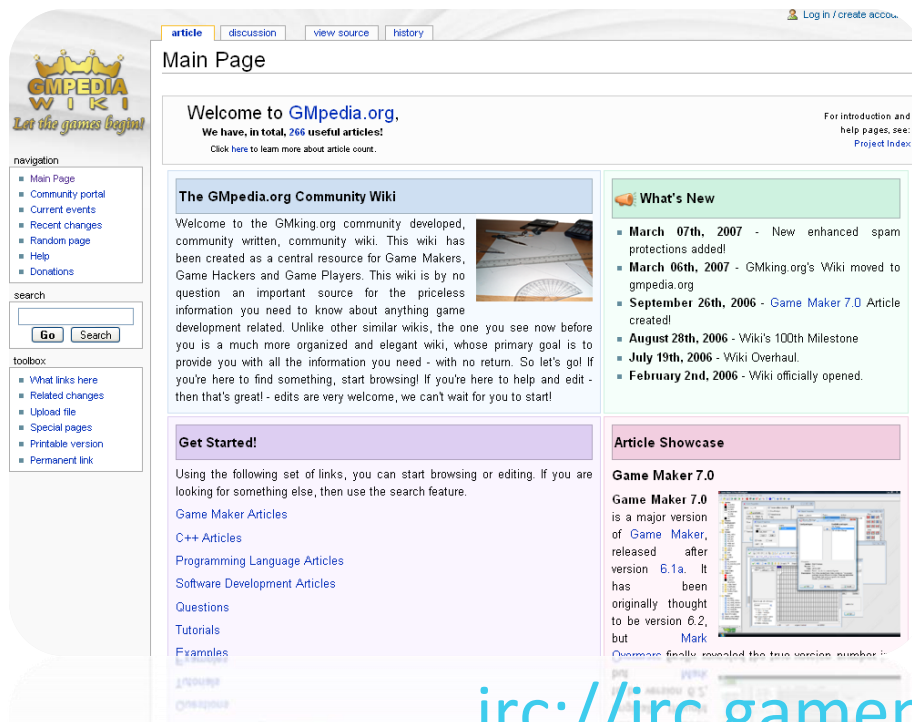
Veeti Paananen

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That's all for this issue!

... but check our other online resources in the meantime...

gmpedia.org

forums.gmking.org

openload.info

ircbloopers.com

gmking.org

irc://irc.gamemaking.org/#gmking

GMking.org *Let them make games!*