THE TECHNOLOGY AND CRAFT OF COMPUTER GAME DESIGN

An introductory course in computer game design

TUTORIALS, GRAPHICS, AND COURSEWARE BY:

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GAME BUILDING TUTORIAL FOR THE GAME

Evil Clutches

*BASED ON THE GAME CREATED BY:

JACOB HABGOOD & MARK OVERMARS

*INCLUSIVE OF GAMEPLAY, GRAPHICAL/SOUND ASSETS, AND PROGRAMMING CONCEPTS

GRAPHIC ASSET ILLUSTRATIONS BY:

KEV CROSSLEY

TUTORIAL AND COURSEWARE DOCUMENTS INCLUDE:

- *Evil Clutches: Stages 1, 2, and 3*
- *Evil Clutches: Stages 4, 5, and 6*
- *Evil Clutches: Stages 7, 8, and 9*
- *Evil Clutches: Stage 10*

STUDENT RECORD DOCUMENTS INCLUDE:

- Tutorial Guide: *Evil Clutches: Stages 1, 2, and 3*
- Tutorial Guide: *Evil Clutches: Stages 4, 5, and 6*
- Tutorial Guide: *Evil Clutches: Stages 7, 8, and 9*
- Tutorial Guide: *Evil Clutches: Stage 10*

COMPANION MATERIALS INCLUDE:

- Glossary
- Concepts Explained

REQUIRED SOFTWARE OR GAME ENGINE:

- Game Maker 8.1 or Game Maker Studio

REQUIRED DIGITAL ASSETS:

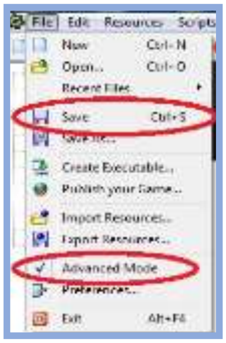
- *Evil Clutches Assets

Evil Clutches: Stages 1, 2, and 3

We're going to follow this basic 3 STAGE process to assign properties and begin building the scene. Since you will develop hypothesis statements, you will not be given any information on the object of the game, or how to play at this time. In the stages, you will create **sprites** and **objects** from **assets**. They will need instructions or "rules" called **properties**. Properties include **events** and **actions** that control the objects. Objects will then be placed in a room. Objects in a room will not do anything until you **program** them by assigning **properties**. Using the Glossary, find the definitions for the *new vocabulary in boldfaced red* and write them in the section provided on your Tutorial Guide.

BE SURE TO PAUSE TO COMPLETE HYPOTHESIS AND EVALUATIONS WHEN PROMPTED.

DO NOT USE THE TEST BUTTON IN THIS ACTIVITY UNTIL YOU ARE PROMPTED.



START HERE: Prior to beginning STAGE 1. Open **GAME MAKER 8.1.** From the **File** drop down menu, select **Advanced Mode.** This entire game build will be done in Advanced Mode. After that, select **Save** from the **File** drop down. Save using the name ***initials_clutches (eg. fk_clutches).*** Your teacher may specify a specific folder or directory.

STAGE 1a:

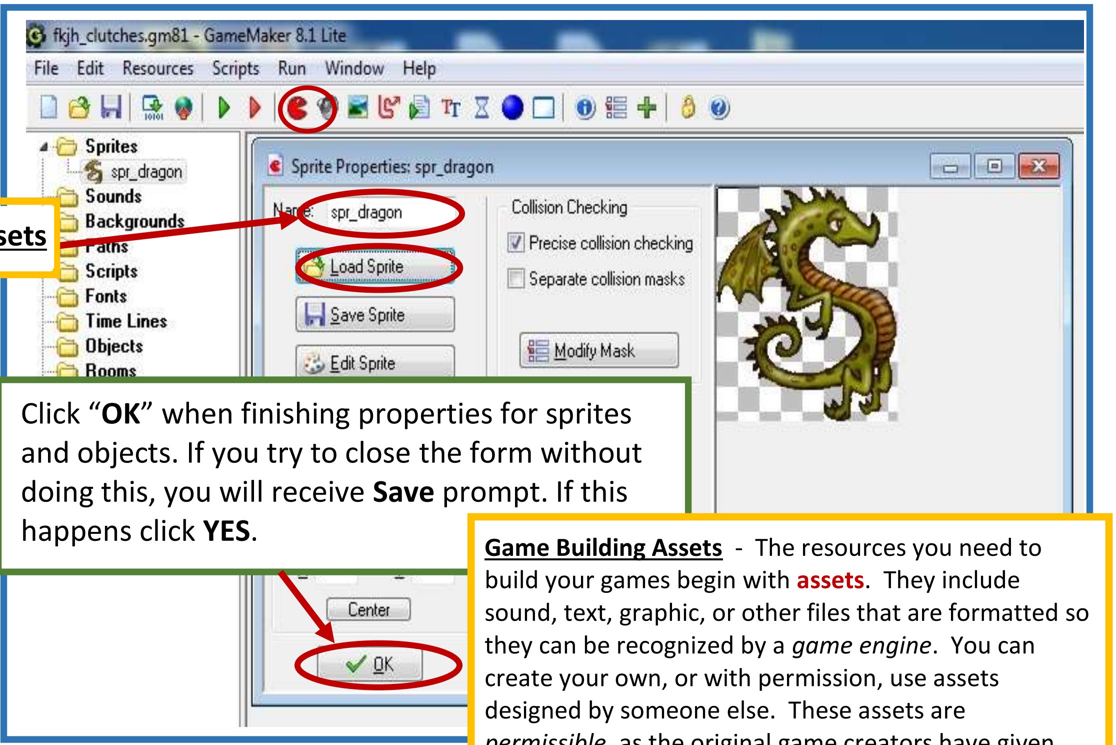
Creating new sprite resources for the game

1- Begin by creating the sprite assets by clicking on the **Create Sprite** icon the tool bar. The graphic assets can all be found in a folder titled **"EVIL CLUTCHES ASSETS"** found on your desktop.

2- Click the **Load Sprite** button and select ***Dragon.gif***. Do not make any changes to the defaults in the sprite window. Double check property settings in then click **OK**. The *form* will close in the *main form window*.

3- Repeat this process for the sprites listed below. Use the file names as shown with underscores (_). The name of the assets in the assets folder should correspond with each.

spr_dragon
spr_boss
spr_demon
spr_baby
spr_fireball



Name: spr_dragon

☑ Precise collision checking

☐ Separate collision masks

Naming Conventions for Assets

You must give your sprite and object resources different names following typical naming conventions. This will help you organize and recognize them later for your game build. Instead of spaces and punctuation, use *underscores* (_). Use the prefix ***spr_*** for sprites and ***obj_*** for objects. You can also write out the words **sprite_** or **object_** as long as you are consistent. Objects and their names will be created in next step.

Click "**OK**" when finishing properties for sprites and objects. If you try to close the form without doing this, you will receive **Save** prompt. If this happens click **YES**.

Game Building Assets - The resources you need to build your games begin with **assets**. They include sound, text, graphic, or other files that are formatted so they can be recognized by a *game engine*. You can create your own, or with permission, use assets designed by someone else. These assets are *permissible*, as the original game creators have given permission for their use. See the acknowledgements on the cover of this tutorial.

GO TO FILE IN THE MENU BAR AND SAVE OR CLICK THE DISKETTE ICON (💾) IN THE TOOLBAR

STAGE 1b:

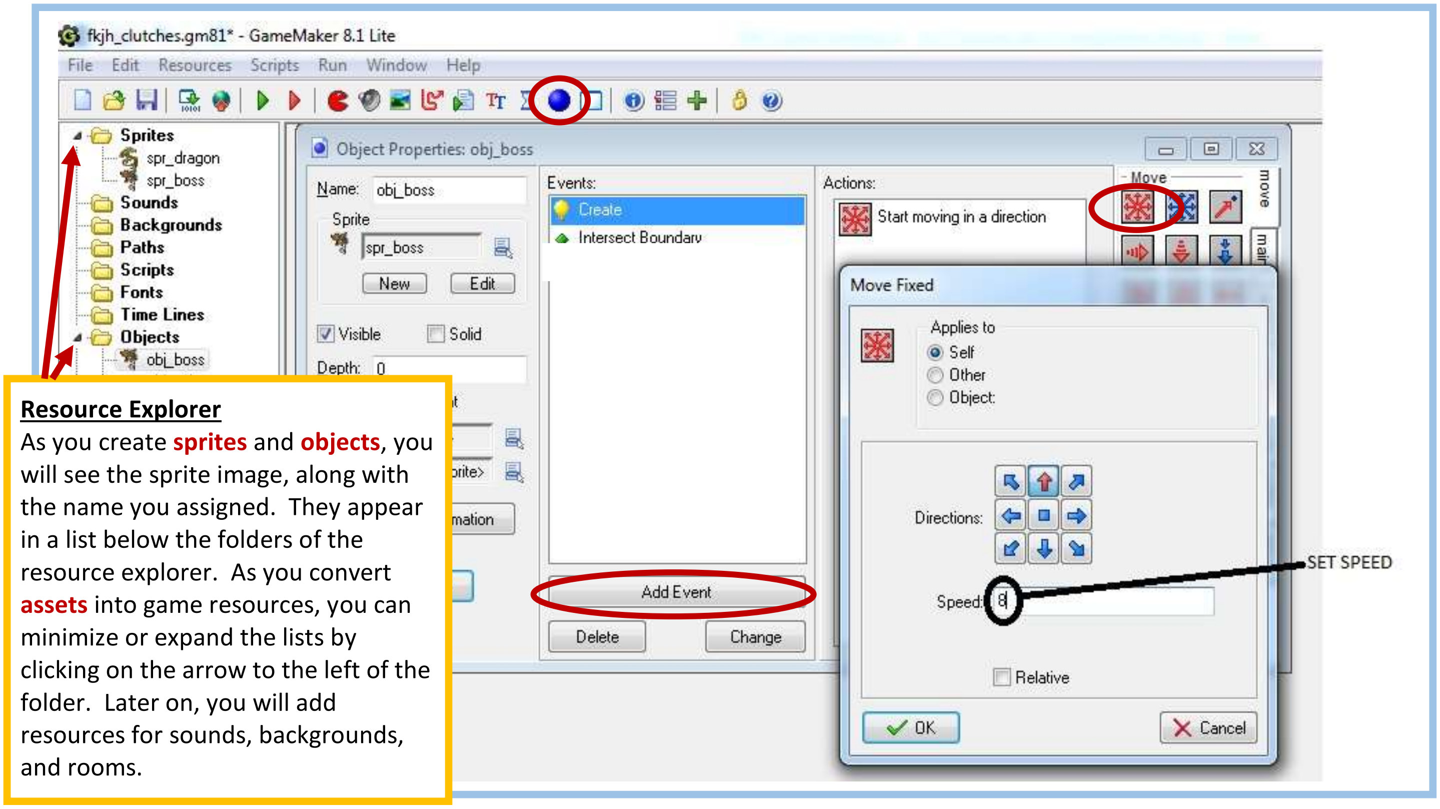
Creating new objects

1- Click the Create an object icon (blue ball symbol) called ***obj_boss*** in the **Name** field. Select ***spr_boss*** for the **Sprite** field. Leave the other settings alone. This ***obj_boss*** is **visible** (checked) but is not **solid** (unchecked).

2- Click on the **Add Event** button and select a **Create**. Set the Action to by dragging and dropping **Start moving in a direction** and select the **up arrow**.

3- Set the speed to **8**.

4- Click **OK** to close the Move Fixed window then **OK** again to save and close the Object Properties form. NOTE: WITHOUT ASSIGNING MORE PROPERTIES TO THIS OBJECT, IT WILL “GO AWAY” SHORTLY AFTER THE GAME SCENE BEGINS. BE SURE TO CONSIDER THIS WHEN YOU WRITE YOUR HYPOTHESIS for STAGE 1 STATEMENT LATER ON.



fkjh_clutches.gm81* - GameMaker 8.1 Lite

Object Properties: obj_boss

Name: obj_boss

Sprite: spr_boss

☑ Visible ☐ Solid

Depth: 0

Events: Create, Intersect Boundary

Actions: Start moving in a direction

Move Fixed

Applies to: ● Self ○ Other ○ Object:

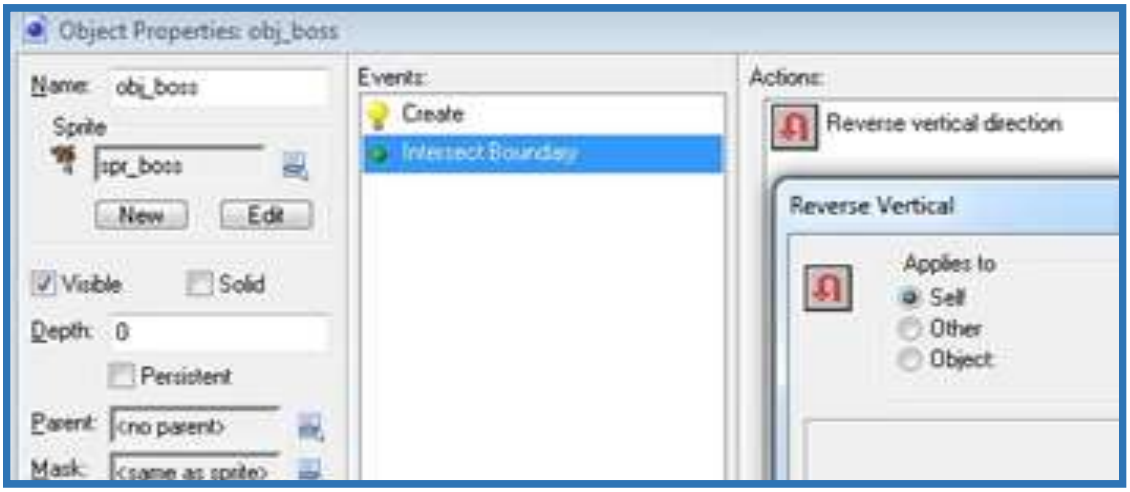
Speed: 8

☐ Relative

Resource Explorer

As you create **sprites** and **objects**, you will see the sprite image, along with the name you assigned. They appear in a list below the folders of the resource explorer. As you convert **assets** into game resources, you can minimize or expand the lists by clicking on the arrow to the left of the folder. Later on, you will add resources for sounds, backgrounds, paths, and rooms.

5- Open the Boss object again, click **Add Event** then **Other Event**. From the list that opens, select **Intersect boundary**. The Action for this Event is to **Reverse vertical direction** as shown below.



Object Properties: obj_boss

Name: obj_boss

Sprite: spr_boss

☑ Visible ☐ Solid

Depth: 0

☐ Persistent

Parent: <no parent>

Mask: <same as sprite>

Events: Create, Intersect Boundary

Actions: Reverse vertical direction

Reverse Vertical

Applies to: ● Self ○ Other ○ Object

SAVING SHOULD BE DONE REGULARLY. TIME TO DO IT AGAIN!

DO THIS ON YOUR TUTORIAL GUIDE

STAGE 1 HYPOTHESIS STATEMENTS: Now it is time to predict the behaviors of the sprite and object properties applied to the assets thus far.

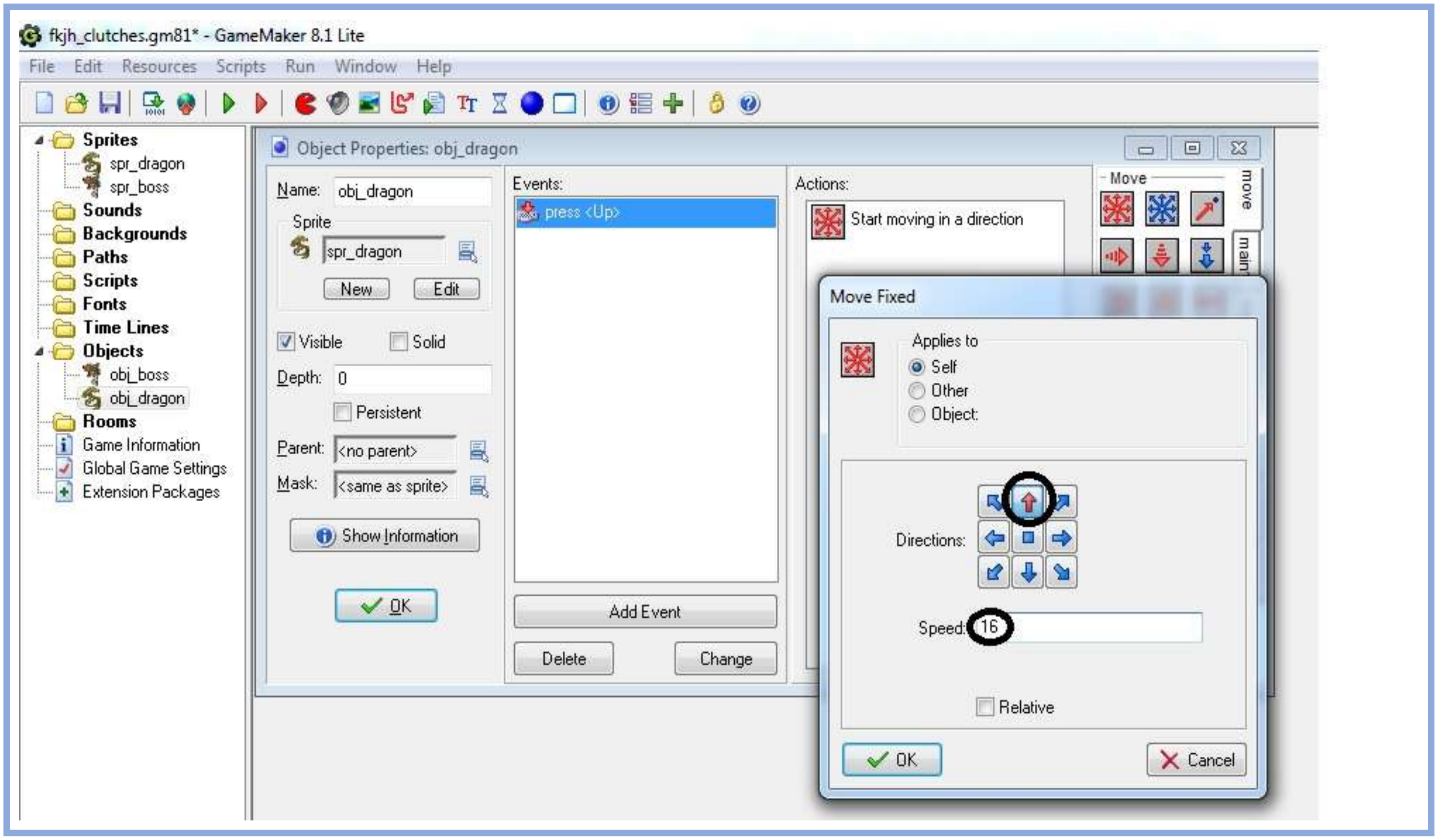
- **In a couple of sentences, explain the behaviors that you expect to see in when the sprite and objects are placed in a room.**

STAGE 2:

More objects

1- Start by creating a new object named ***obj_dragon***, and give it the sprite ***spr_dragon*.** Again, the graphic asset is found the **EVIL CLUTCHES ASSETS** folder.

2- Add a **Keyboard <Up> Event** and, for its Action, **Start moving in a direction**. Select the up arrow and set the speed to **16**. In later stages, you will see why it is important to double the speed of the dragon.



fkjh_clutches.gm81* - GameMaker 8.1 Lite

Object Properties: obj_dragon

Name: obj_dragon

Sprite: spr_dragon

☑ Visible □ Solid

Depth: 0

□ Persistent

Parent: <no parent>

Mask: <same as sprite>

Events: press <Up>

Actions: Start moving in a direction

Move Fixed

Applies to: ● Self ○ Other ○ Object:

Speed: 16

□ Relative

TRY THESE NEXT FEW STEPS FOR THE DRAGON WITHOUT TUTORIAL PICTURES:

3- Add a **Keyboard <Down> Event** for the object and, then drag and drop **Start moving in a direction** action.

4- Select the **down arrow**, same speed **16**.

5- Add another **Keyboard <No key> Event** and select **Start moving in a direction**.

6- Select the **center square button (no movement**) and set the speed to **0**.

7- Click **OK**.

HAVE YOU SAVED LATELY? …….PLEASE DO SO!

DO THIS ON YOUR TUTORIAL GUIDE

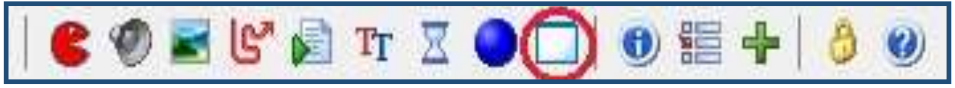
STAGE 2 HYPOTHESIS STATEMENTS: Now it is time to predict the behaviors of the dragon object properties applied to the asset.

- **In a couple of sentences, explain the behaviors that you expect to see in when the dragon object is placed in a room based on each of the properties you added.**

STAGE 3:

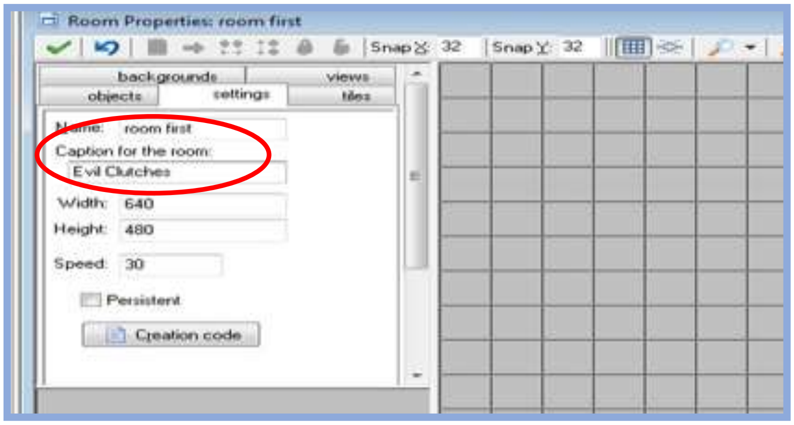
Creating a room

1- Create a **Room** by clicking the button in the top tool bar, select the **settings** tab.



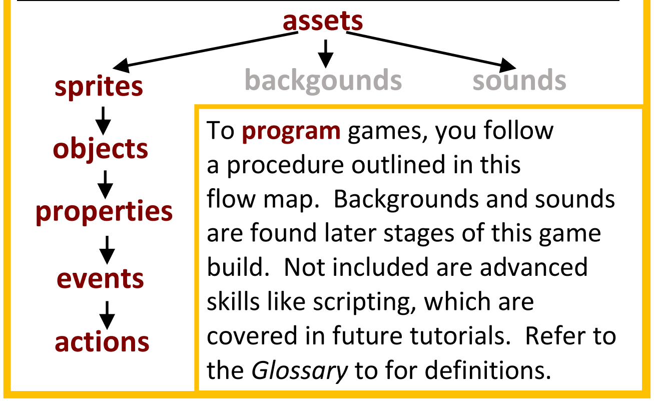
2- In the **name** field, type in "***room_first***".

3- In the **Caption for the room** field, type in the name of the game, "***Evil Clutches***". The other default settings should be left alone.



Name: room first
Caption for the room: Evil Clutches
Width: 640
Height: 480
Speed: 30
□ Persistent
Creation code

Programming sequence in Gamemaker



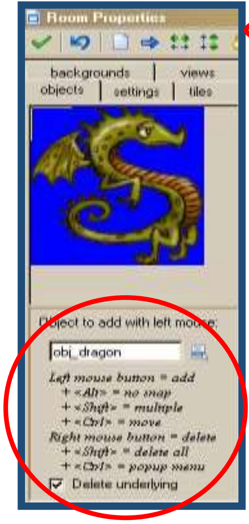
To **program** games, you follow a procedure outlined in this flow map. Backgrounds and sounds are found later stages of this game build. Not included are advanced skills like scripting, which are covered in future tutorials. Refer to the *Glossary* to for definitions.

4- Select the **objects** tab and, down at the bottom, select ***obj_dragon*** and click on the room grid to place a copy of this object near the far left side of the screen. If you place it incorrectly, you can use the right mouse button to delete. Try holding down the keys in the list below the object field. Checking the **Delete underlying** box (bottom left) and setting the **X and Y Snaps** to **16** (top of room) makes it easier. You can even count grid lines as you place.

5- Below where it says "**Object to add with left mouse**" change the field to ***obj_boss*** by clicking the icon to the right. Place one copy of the object to the far right side of the room following the same procedure as the dragon.

Coordinate systems

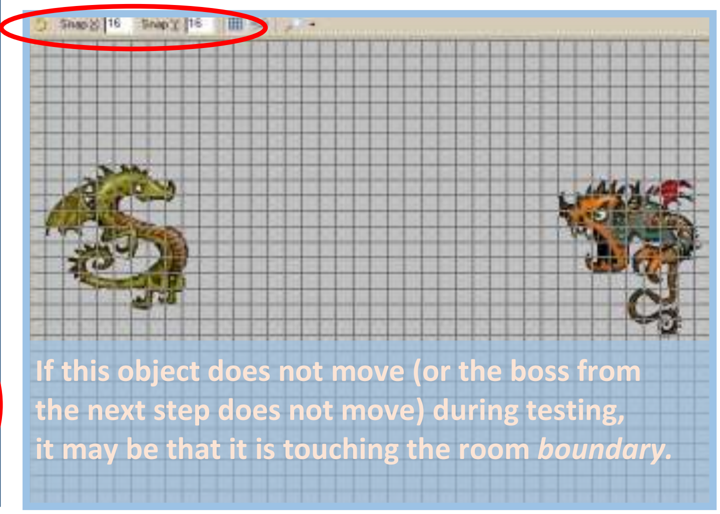
Notice that the room is on a grid. This is useful to place objects where you want them in the room. The *x coordinates* locate objects horizontally and the y *coordinates* locate the objects vertically. Coordinate systems will be used in various ways in Game Maker. Look for more references in Concepts Explained.



Object to add with left mouse:
obj_dragon

Left mouse button = add
+ <Alt> = no snap
+ <Shift> = multiple
+ <Ctrl> = move
Right mouse button = delete
+ <Shift> = delete all
+ <Ctrl> = popup menu

☑ Delete underlying



If this object does not move (or the boss from the next step does not move) during testing, it may be that it is touching the room *boundary*.

SAVE AGAIN!

DO THIS ON YOUR TUTORIAL GUIDE

STAGE 3 HYPOTHESIS STATEMENTS: Now it is time to predict the way that all sprites and objects will behave in the room.

- **In a couple of sentences, explain the behaviors that you expect to see in the room. Be sure to include how you as a player would interact with the game to control the action.**

Now it's time to test your game, so go ahead and click on the green triangle (▶) on the menu bar to run the game file in a playable mode.

DOES THE ACTION THAT YOU SEE AND THE CONTROL OF THE OBJECTS MEET YOUR HYPOTHESIS STATEMENTS?

You should see the boss monster floating up and down on its own, bouncing between the top and bottom of the screen. You should also be able to move the dragon up and down using the corresponding arrow keys on the keyboard. When no key is pressed, she should stay still. If one or both do not move, reread and recheck your properties from Stage 3 Steps 4 and 5. If you have all that working, that's awesome! If NOT, then go through the properties for each sprite and object to find where you went wrong.

(▶)

<F4> and <esc>

Pressing the <F4> key to maximize the game to a presentation mode that fills the screen. Pressing again minimizes the screen to a window. Press the escape key <esc> to close the game and return to your Gamemaker file.

DO THIS ON YOUR TUTORIAL GUIDE

STAGE 1, 2, 3 TEST & EVALUATION: Now it is time to explain "why" your game is working or "why not" ….that's evaluation.

Answer the following in a couple of sentences.

- **Are your hypothesis statements valid or invalid?**
- **Does the action that you see and the control of the objects look like what you expected in your hypothesis statements?**
- **If NOT, what was the difference in behaviors?**
- **What needed to be fixed and how did you fix it?**

SAVE YOUR GAME FILE AGAIN BEFORE CLOSING