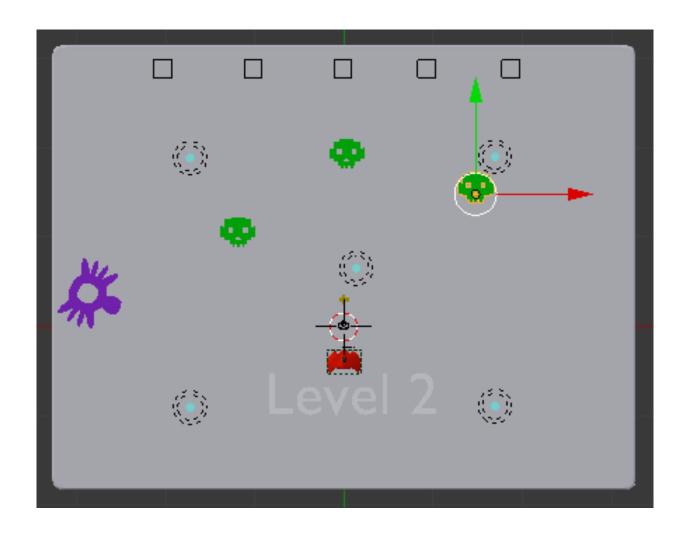
CHAPTER 9:

ADDING LEVELS



IN THIS CHAPTER WE WILL ADD TWO LEVELS, AND TO EACH LEVEL WE WILL ADD A SIMPLE 'BOSS' ENEMY. THE BOSS WILL TRIGGER THE NEXT LEVEL WHEN SHOT, OR DESTROY THE PLAYER IF IT IS NOT SHOT.

THIS WILL BE THE CORE GAMEPLAY MECHANIC OF OUR GAME. WE WON'T BE USING ANY COUNTERS OR SCOREBOARDS, SO THE PLAYER WILL ONLY BE ABLE TO JUDGE HIS OR HER PROGRESS BASED ON WHAT WHAT LEVEL THEY WERE ABLE TO REACH. WITH EACH LEVEL, THE ENEMIES WILL MOVE FASTER AND FASTER, SO THE GAME WILL CONTINUE TO INCREASE IN DIFFICULTY.

HERE IS A LIST OF BLENDER HOTKEYS:

SHIFT+A: ADD AN OBJECT TO SCENE

TAB: TOGGLE OBJECT AND EDIT MODE

A: SELECT/DESELECT ALL OBJECTS IN A SCENE

S: SCALE

R: ROTATE

G: MOVE

X: DELETE

F: MAKE A FACE

C: SELECT SMALL AREAS

B: SELECT A LARGE AREA

CTRL+R: ADD LOOP CUT

CTRL+Z: UNDO

5: TOGGLE PERSPECTIVE/ORTHO MODE

1 (NUM PAD): FRONT VIEW (CTRL+1=OPPOSITE)

3 (NUM PAD): SIDE VIEW (CTRL+3=OPPOSITE)

7 (NUM PAD): TOP VIEW (CTRL+7=OPPOSITE)

HOLD MMB+DRAG: ROTATE VIEWPORT

SCROLL MMB: ZOOM IN/OUT

HOLD SHIFT + MMB: SHIFT VIEWPORT

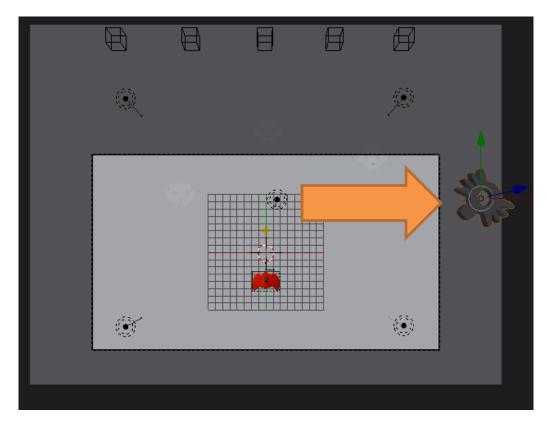
SHIFT+SPACEBAR: MAXIMIZE VIEWPORT

SHIFT+S: SET CURSOR

CTRL+J: JOIN MESHES

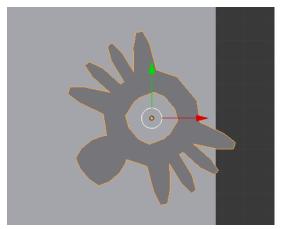
Z: TOGGLE WIREFRAME MODE

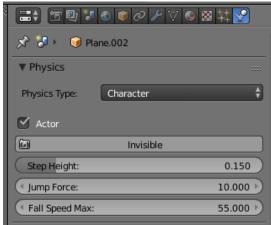
SHIFT+D: DUPLICATE

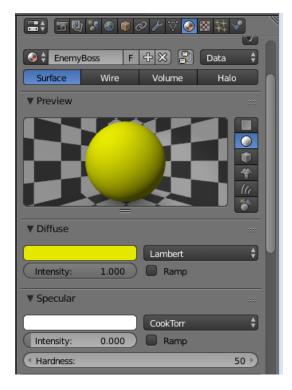


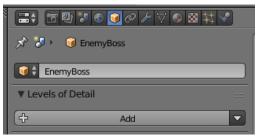


1) LET'S MAKE A BOSS ENEMY THAT
WILL SERVE AS OUR END OF LEVEL
TRIGGER. YOU CAN USE A DEFAULT
CUBE IF YOU'D LIKE (IN THIS
EXAMPLE, I'M USING A SPIDER
ENEMY). PLACE THIS ENEMY
OUTSIDE OF THE CAMERA VIEW AND
SOMEWHERE THAT WON'T CAUSE IT
TO BE IN THE WAY OF YOUR OTHER
SPAWNING ENEMIES (THIS IS IN
YOUR MAIN GAME SCENE). ALSO,
MAKE SURE YOU ARE IN 'BLENDER
GAME' MODE.

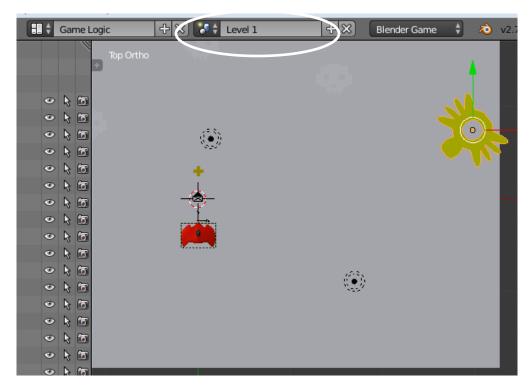




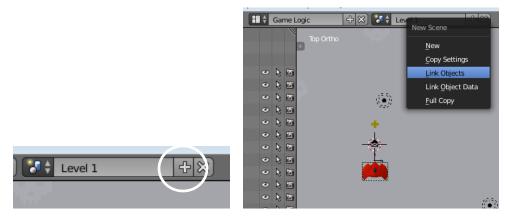




2) MAKE SURE YOUR ENEMY BOSS IS SELECTED. ADD CHARACTER PHYSICS TO THE BOSS, AND SELECT 'ACTOR'. ALSO ADD A MATERIAL TO YOUR BOSS. CALL THIS 'ENEMYBOSS'. IN THE OBJECT TAB, RENAME THE PLANE 'ENEMYBOSS'.



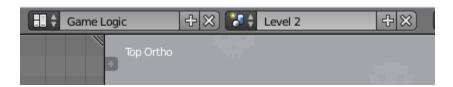
3) THIS NEXT STEP WILL PREVENT A LOT OF CONFUSION: GO INTO THE SCENE NAME AND CALL THIS SCENE 'LEVEL 1'.



4) NEXT, HIT THE PLUS SIGN NEXT TO LEVEL 1. SELECT 'LINK OBJECTS'.



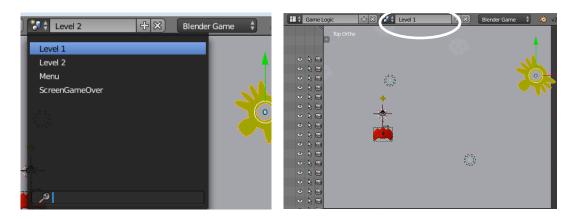
5) YOU SHOULD SEE 'LEVEL 1.001'.



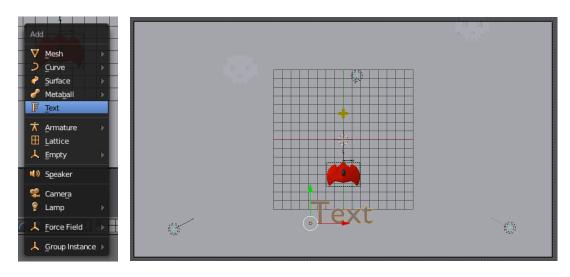
6) CHANGE IT TO SAY 'LEVEL 2'.



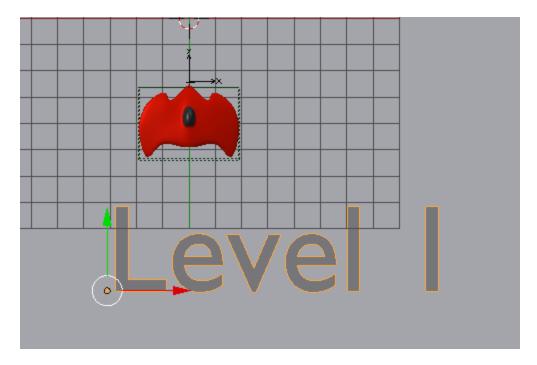
7) NOW, IF YOU CLICK ON THE DROPDOWN NEXT TO YOUR SCENE, YOU SHOULD SEE: LEVEL 1, LEVEL 2, MENU, AND YOUR GAME OVER SCENE.



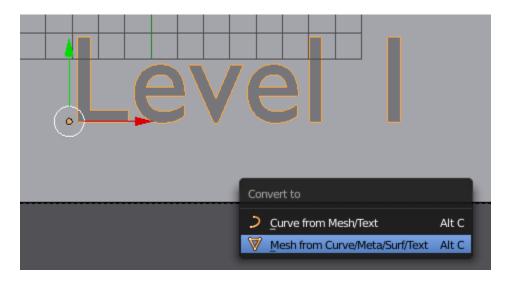
8) SELECT LEVEL 1. WE WILL BE WORKING IN THIS SCENE FOR NOW.



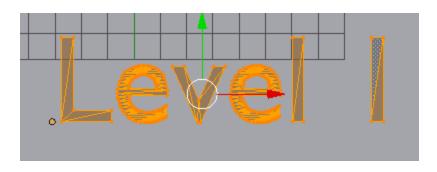
9) MAKE SURE YOU ARE IN CAMERA VIEW (ZERO). PRESS SHIFT+A AND ADD A TEXT OBJECT.



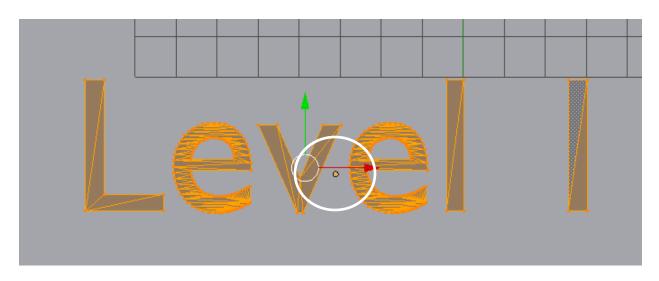
10) WITH THE TEXT SELECTED, PRESS 'TAB' TO GO INTO EDIT MODE. USE 'BACKSPACE' TO DELETE THE LETTERS. TYPE IN 'LEVEL 1'.



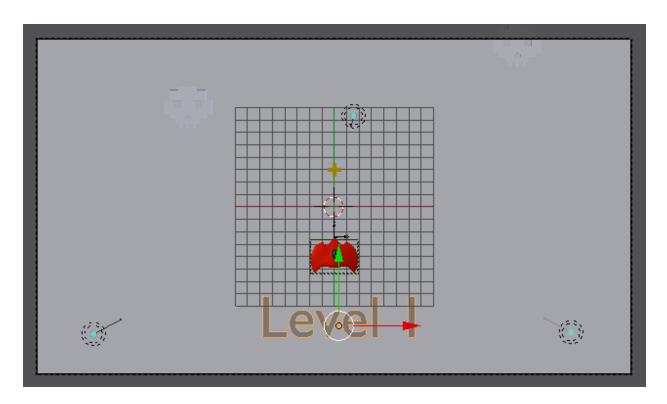
11) PRESS 'ALT+C' AND SELECT 'MESH FROM CURVE/META/SURF/TEXT'.



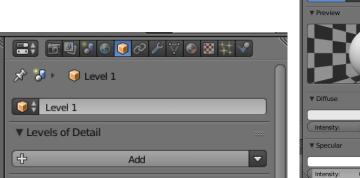
12) PRESS 'TAB' TO GO INTO EDIT MODE, THEN 'A' TO SELECT ALL OF THE VERTICES.

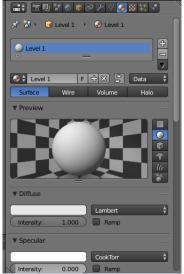


13) USE 'G' TO MOVE THE WORDS
'LEVEL 1' UNTIL THE ORANGE ORIGIN
POINT IS IN THE MIDDLE.

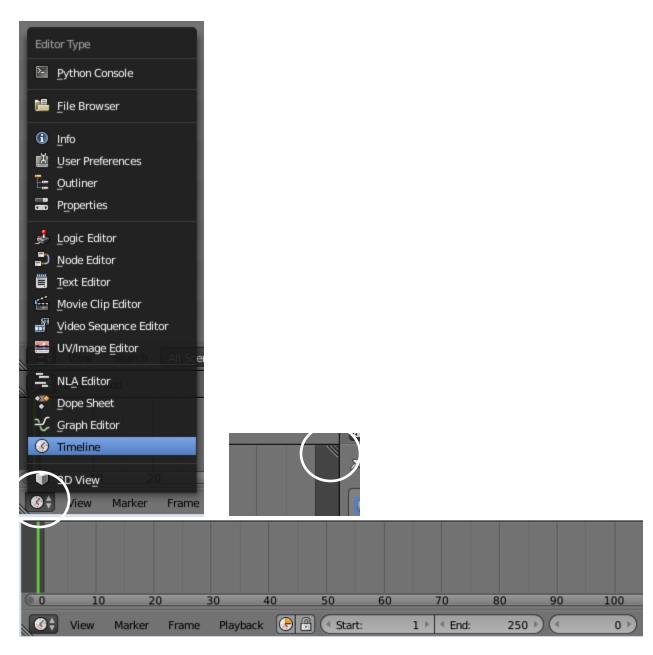


14) PRESS 'TAB' TO EXIT EDIT MODE.
USE 'G' TO MOVE 'LEVEL 1' TO THE
LOWER CENTER OF YOUR CAMERA.





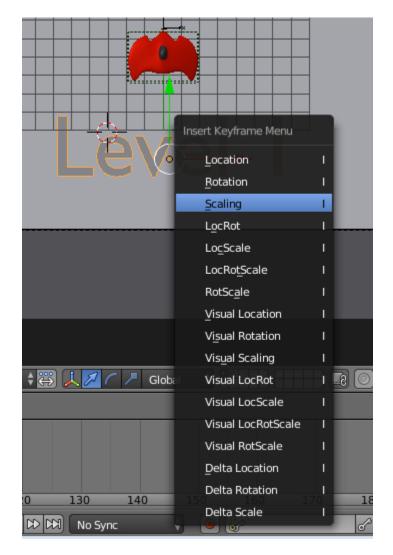
15) IN THE OBJECT TAB, NAME THE TEXT 'LEVEL 1'. ADD A MATERIAL TO THE TEXT.



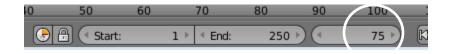
16) GO INTO YOUR TIMELINE (YOU MIGHT NEED TO DRAG A CORNER DOWN (CIRCLED) AND THEN SELECT 'TIMELINE' FROM THE EDITOR TYPE IF YOU CAN'T SEE THE TIMELINE).



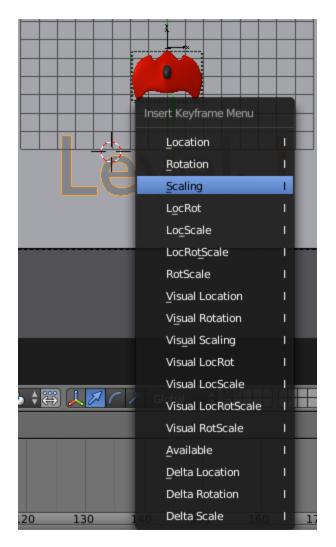
17) YOUR 'LEVEL 1' TEXT SHOULD STILL BE SELECTED. MAKE SURE YOUR CURRENT FRAME IS SET TO 'ZERO'.



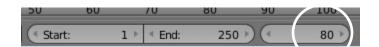
18) PRESS 'I'. SELECT SCALING.



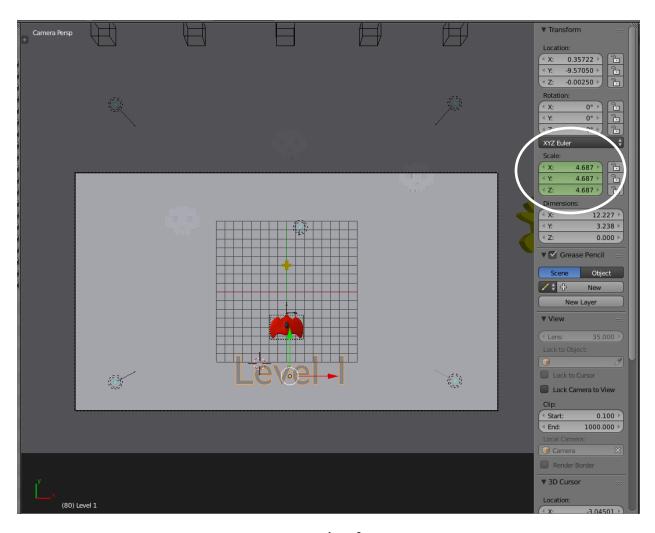
19) SET THE CURRENT FRAME TO 75.



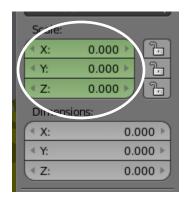
20) PRESS 'I' AGAIN. SET A SCALING KEY FRAME.



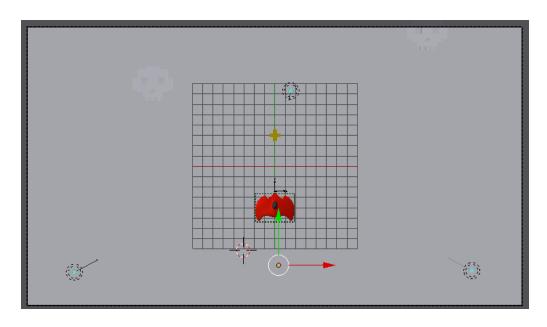
21) CHANGE THE CURRENT FRAME TO 80.



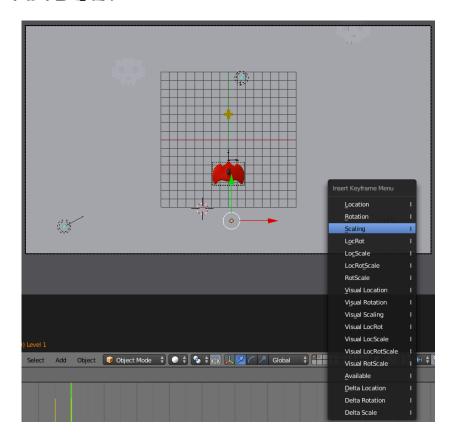
22) NEXT, PRESS 'N'. THIS COMMAND BRINGS UP A VERY USEFUL TOOLBAR. IN THIS CASE, WE WANT THE SCALE BOX (CIRCLED).



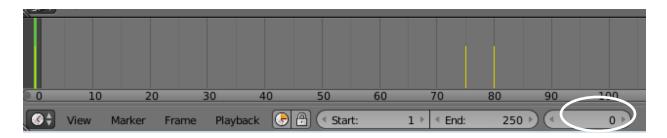
23) SET THE SCALE TO ALL ZEROES.



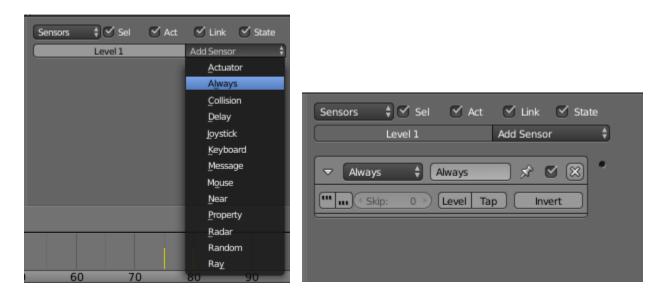
24) THE TEXT WILL NO LONGER BE VISIBLE.



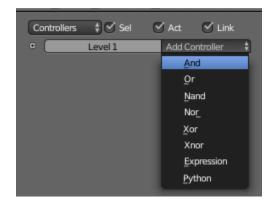
25) PRESS 'I' AND SET A SCALING KEY FRAME.



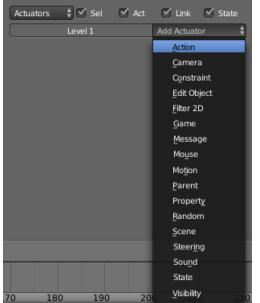
26) SET YOUR CURRENT FRAME BACK TO 'ZERO'.

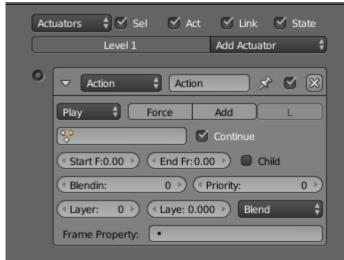


27) LET'S ADD SOME LOGIC. MAKE SURE YOUR 'LEVEL 1' TEXT IS SELECTED. ADD AN 'ALWAYS' SENSOR.



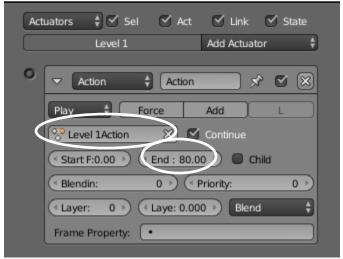
28) ADD AN 'AND' CONTROLLER.



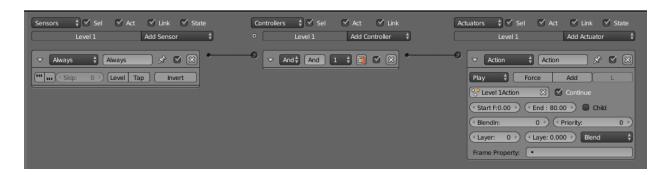


29) ADD AN 'ACTION' ACTUATOR.

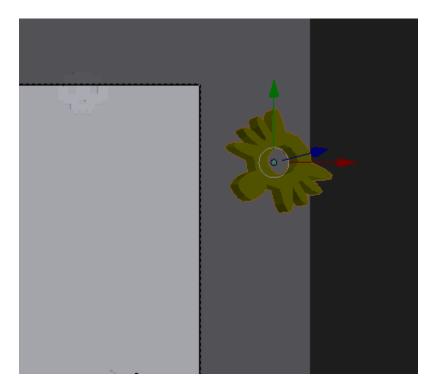




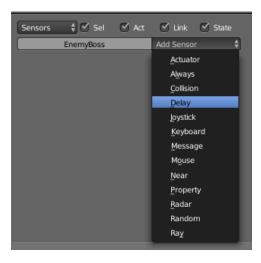
30) SELECT 'LEVELIACTION' FROM THE DROPDOWN. THIS IS THE 80 FRAME ANIMATION YOU MADE FOR YOUR TEXT. END THE ANIMATION AT FRAME 80.

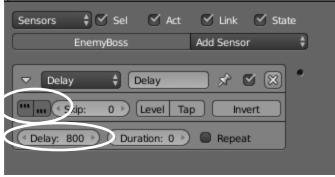


31) CONNECT ALL THREE BRICKS.



32) NOW, LET'S ADD FUNCTIONALITY TO OUR ENEMY BOSS. SELECT YOUR ENEMY BOSS.





33) ADD A DELAY SENSOR TO YOUR BOSS. WE ARE GOING TO HAVE THE BOSS WAIT FOR A CERTAIN PERIOD OF TIME BEFORE HE SHOWS UP. I HAVE MARKED BOTH TRUE AND FALSE AND I HAVE SET THE DELAY TO 800. THIS WILL MAKE THE BOSS WAIT FOR ABOUT 10-15 SECONDS.



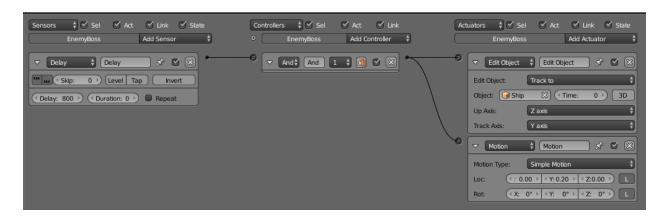
34) ADD AN 'AND' CONTROLLER.



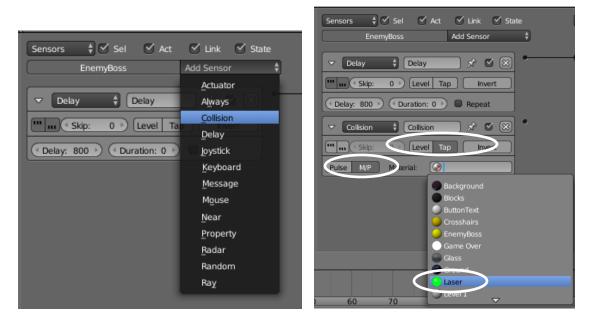
35) ADD AN 'EDIT OBJECT' ACTUATOR. THEN ADD A 'MOTION' ACTUATOR.



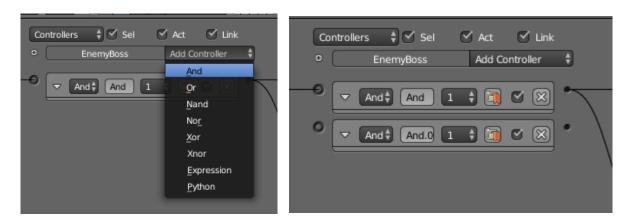
36) SET UP YOUR ACTUATORS AS YOU HAVE IN PAST TUTORIALS: CHANGE EDIT OBJECT TO 'TRACK TO', SET THE OBJECT TO 'SHIP', AND THEN SET THE Y-LOC TO .20 (OR WHATEVER YOU'D LIKE).



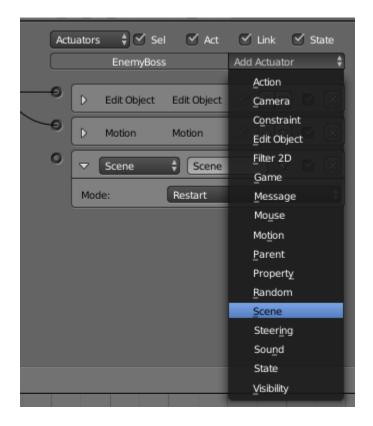
37) CONNECT THE FOUR BLOCKS TOGETHER AS SHOWN.



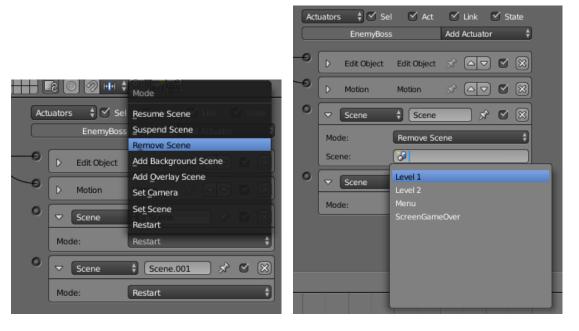
38) NEXT, ADD A COLLISION SENSOR. SELECT 'TAP' AND CLICK THE 'M/P' BUTTON. YOU CAN NOW SELECT YOUR LASER MATERIAL.



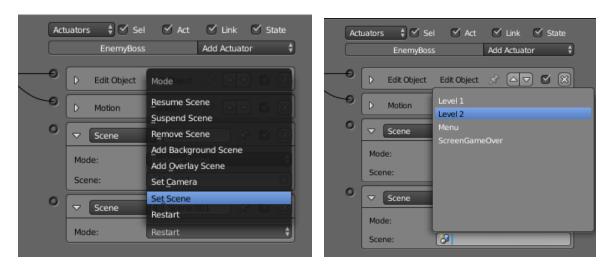
39) ADD ANOTHER 'AND' CONTROLLER.



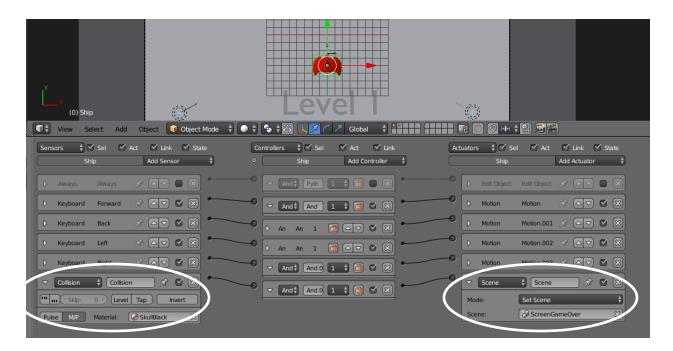
40) ADD TWO SCENE ACTUATORS.



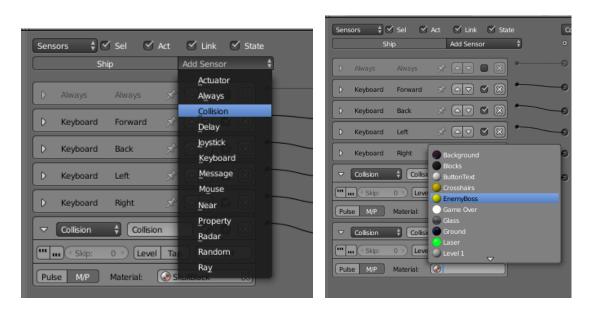
41) IN THE FIRST SCENE BLOCK, SELECT 'REMOVE SCENE' (NEXT TO MODE). THEN, CHOOSE 'LEVEL 1' NEXT TO SCENE TO REMOVE IT.



42) IN THE SECOND SCENE BLOCK, SELECT 'SET SCENE' FOR MODE AND SELECT SCENE 'LEVEL 2' TO LOAD THAT ONE.



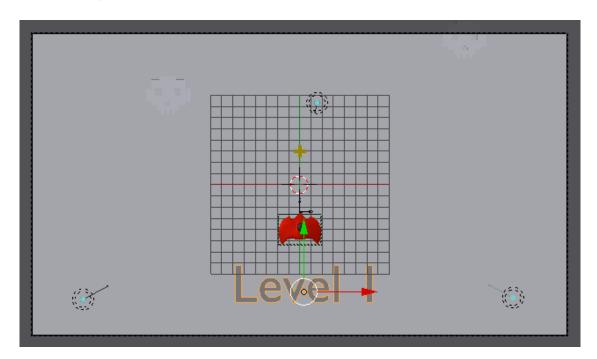
43) TO FINISH UP LEVEL 1, SELECT YOUR HERO SHIP. FIND THE COLLSION LOGIC BRICK THAT LINKS TO THE GAME OVER SCREEN.



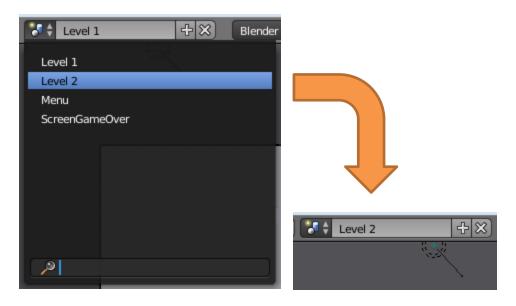
44) ADD ANOTHER COLLISION SENSOR. CLICK 'M/P' AND SELECT THE ENEMYBOSS MATERIAL.



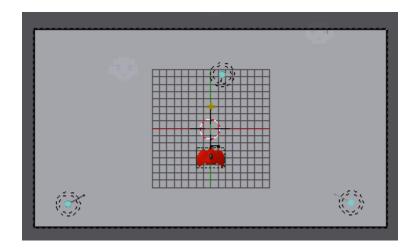
45) LASTLY, HOOK UP THIS NEW COLLISION WITH THE SAME 'AND' CONTROLLER AS THE OTHER ONE. NOW, IF THE ENEMY BOSS TOUCHES THE HERO SHIP, THE GAME WILL END.



46) IF YOU PLAY YOUR GAME, YOU SHOULD SEE 'LEVEL 1' ON THE SCREEN. AS YOU PLAY, IT WILL DISAPPEAR. YOUR BOSS SHOULD SHOW UP, AND IF YOU SHOOT HIM, YOU SHOULD IMMEDIATELY FIND YOURSELF IN LEVEL 2.



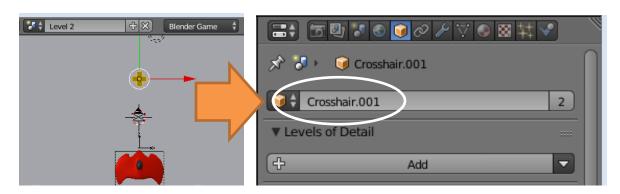
47) LET'S SET UP LEVEL 2. SELECT 'LEVEL 2' FROM THE SCENE DROPDOWN.



48) SO FAR, LEVEL 2 LOOKS EXACTLY THE SAME AS LEVEL 1. IF WE WANT TO ADJUST ANY SETTINGS, WE'LL HAVE TO MAKE COPIES OF THE OBJECTS WE WANT TO EDIT.

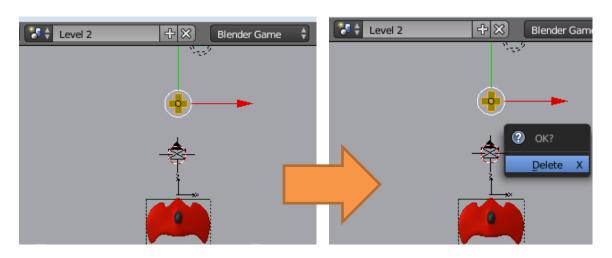


49) OUR FIRST STEP WILL BE
ENSURING THAT ALL OUR OBJECTS
ARE PROPERLY NAMED. SELECT
YOUR CROSSHAIR IN LEVEL 2.
CLICK ON THE OBJECT TAB. IF
YOUR LINK OF LEVELS 1 AND 2
WORKED CORRECTLY, YOUR LEVEL 2
CROSSHAIR NAME SHOULD BE THE
SAME AS THE ONE IN LEVEL 1. IF
THIS IS THE CASE, SKIP TO STEP #
58.

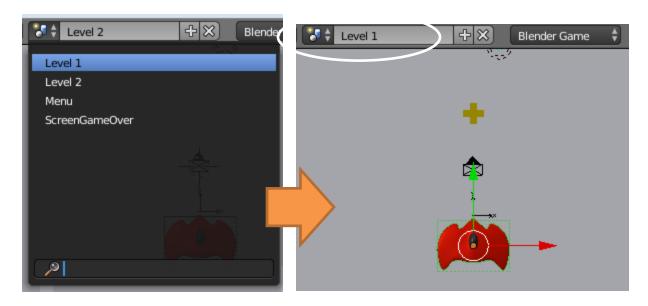


50) HOWEVER, SOME OF MY STUDENTS NOTICED THAT THE NAME OF THEIR CROSSHAIR WAS DIFFERENT; IT READ 'CROSSHAIR.001'.

51) I'M NOT SURE WHY THE 'LINK OBJECTS OPTION IN STEP #4
DIDN'T WORK RIGHT FOR SOME KIDS. IN ANY CASE, FOR THIS PROJECT BOTH NAMES WILL NEED TO BE THE SAME. IF WE DO NOT MAKE THEM THE SAME, WE WOULD HAVE TO MODIFY OUR CROSSHAIR PYTHON SCRIPT, WHICH IS TIME-CONSUMING. IF YOUR NAME IS DIFFERENT, SELECT THE CROSSHAIR OBJECT IN LEVEL 2 AND PRESS 'X' TO DELETE IT (IF YOUR NAMES ARE THE SAME, SKIP TO STEP # 58).



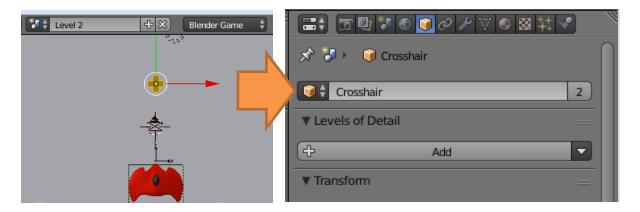
52) SELECT THE 'CROSSHAIR.001'.
PRESS 'X' TO DELETE IT.



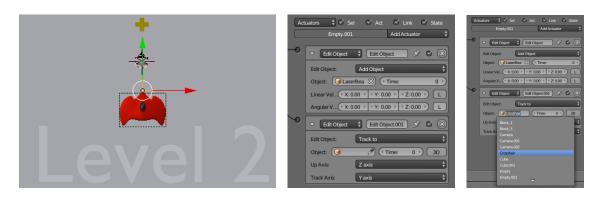
53) FROM THE SCENE SELECTION DROPDOWN, SELECT 'LEVEL 1'.



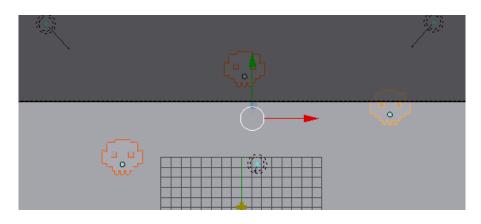
54) SELECT THE LEVEL 1 CROSSHAIR OBJECT. THEN, USE THIS USEFUL COMMAND: 'CTRL+L'. THIS ALLOWS YOU TO SHARE (OR LINK) THE ASSET WITH DIFFERENT SCENES. SELECT 'LEVEL 2' TO LINK IT TO LEVEL 2.



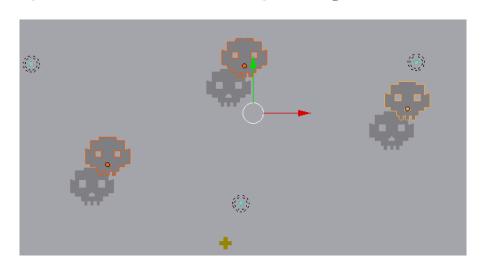
55) NOW, YOUR LEVEL 2 CROSSHAIR
OBJECT SHOULD BE THE SAME NAME
AS THE LEVEL 1 OBJECT
'CROSSHAIR'.



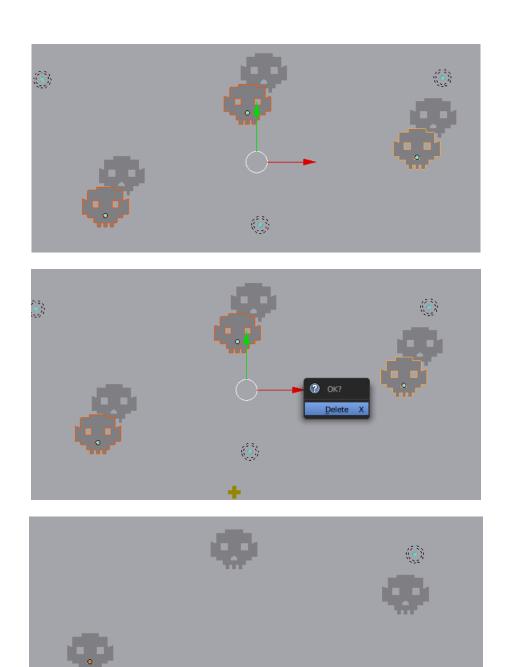
- 56) SELECT YOUR EMPTY LASER
 SPAWNER. THE EDIT OBJECT
 ACTUATOR SHOULD SHOW A BLANK
 'TRACK TO' OBJECT. SELECT
 'CROSSHAIR' FROM THE DROPDOWN.
- 57) IF YOU PLAY YOUR GAME NOW, YOUR CROSSHAIR SHOULD FUNCTION PROPERLY.



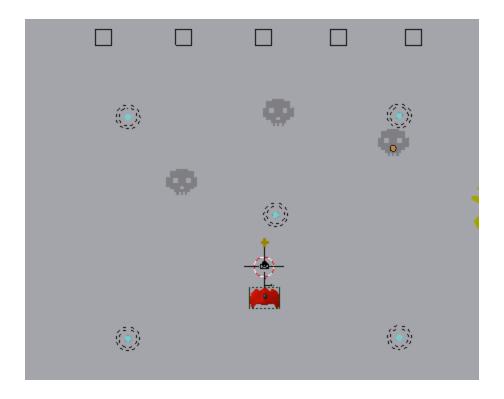
58) LINKING OBJECTS BETWEEN
SCENES WORKS GREAT FOR THINGS
YOU AREN'T PLANNING ON
CHANGING, LIKE THE CROSSHAIR
FUNCTIONALITY. BUT WHAT IF YOU
WANT TO CHANGE THE COLOR AND
SPEED OF YOUR ENEMIES IN LEVEL
2? FOR THIS WE'LL HAVE TO
CREATE BRAND NEW COPIES OF THE
ENEMIES WITH DIFFERENT NAMES.
HOLD SHIFT. RIGHT-CLICK EACH OF
YOUR ENEMIES TO SELECT THEM.



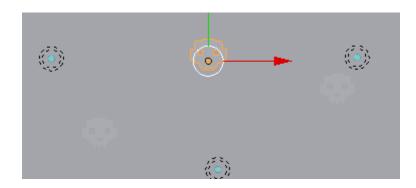
59) PRESS 'SHIFT+D' TO DUPLICATE YOUR ENEMIES.



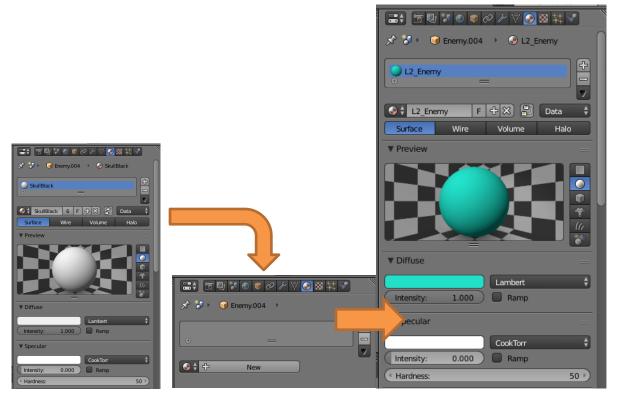
60) HOLD SHIFT. RIGHT-CLICK TO SELECT EACH OF THE ORIGINAL ENEMIES. PRESS 'X' TO DELETE THEM. YOU SHOULD BE LEFT WITH THE NEW ENEMIES YOU MADE.



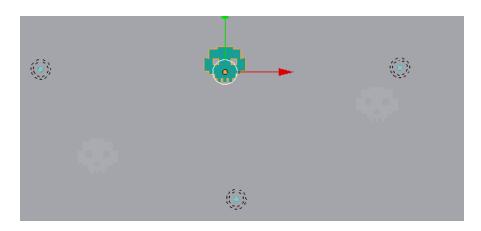
61) PLAY YOUR GAME TO MAKE SURE EVERYTHING STILL WORKS ('START' OR 'P'). YOUR NEW ENEMIES SHOULD TRIGGER THE 'GAME OVER' SCREEN IF THEY TOUCH YOUR HERO, AND THEY SHOULD ALSO RESPAWN IF HIT BY YOUR PROJECTILES.



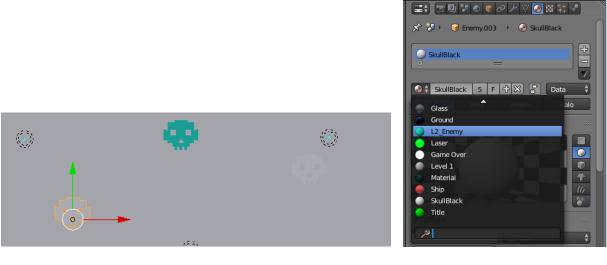
62) SELECT ONE OF YOUR ENEMIES.



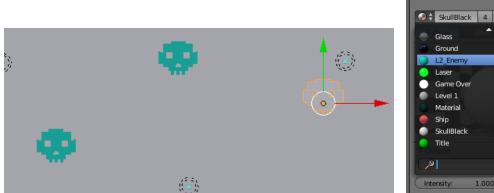
63) FIND THE MATERIALS TAB.
SUBTRACT THE MATERIAL FROM
THE ENEMY. ADD A NEW MATERIAL.
NAME THIS MATERIAL 'L2_ENEMY'
OR SOMETHING SIMILAR. CHANGE
THE COLOR IN THE DIFFUSE BAR.



64)YOUR ENEMY SHOULD NOW BE THE NEW COLOR.

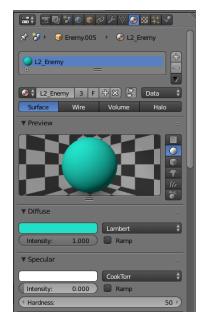


65) SELECT ANOTHER ENEMY. IN THE MATERIAL TAB, USE THE DROPDOWN TO APPLY YOUR NEW MATERIAL.



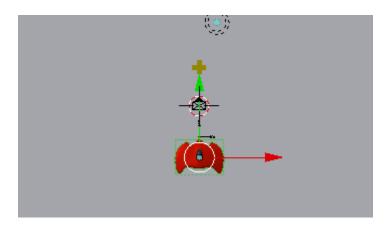


66)SELECT YOUR OTHER ENEMY. APPLY YOUR NEW MATERIAL TO THIS ONE AS WELL.

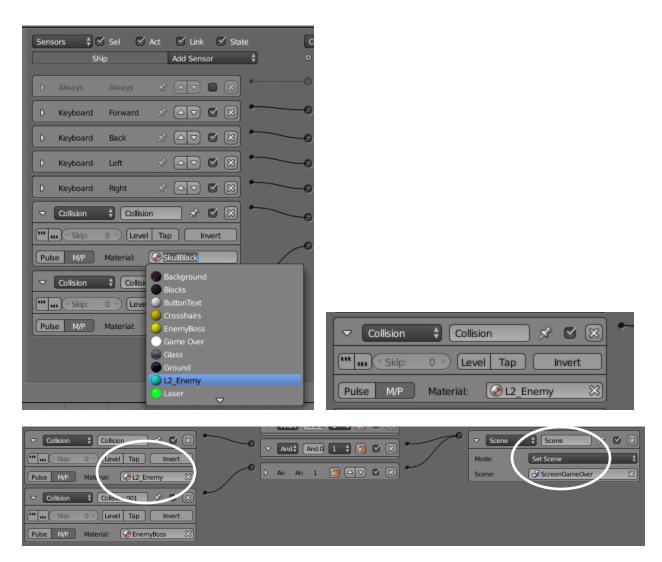




67) YOUR LEVEL 2 ENEMIES SHOULD ALL BE A DIFFERENT COLOR THAN YOUR LEVEL 1 ENEMIES.



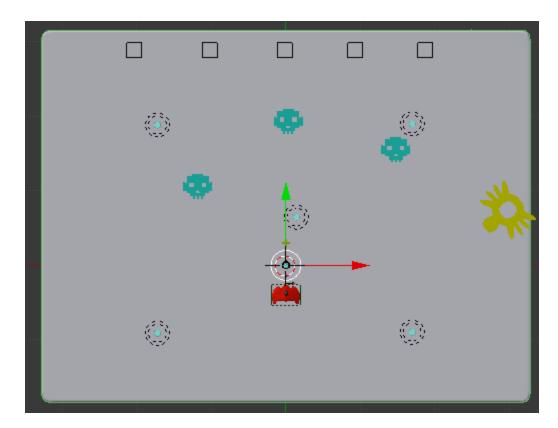
68) NEXT, WE NEED TO MAKE YOUR HERO REACT TO THE NEW MATERIAL. SELECT YOUR HERO SHIP.



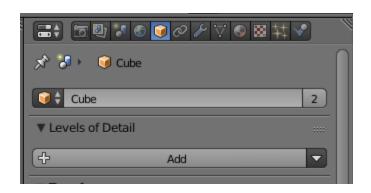
69)FIND THE COLLISION LOGIC BRICK THAT CONTAINS THE MATERIAL OF THE PREVIOUS ENEMIES. SELECT THE NEW MATERIAL THAT WE JUST MADE. NOW, IF YOUR NEW ENEMIES HIT YOUR HERO, THE GAME OVER SCREEN WILL ACTIVATE.



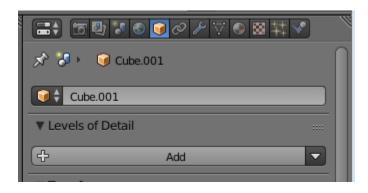
70) PLAY YOUR GAME ('START' OR 'P').
YOUR ENEMIES SHOULD DIE,
RESPAWN, AND DAMAGE YOUR
CHARACTER.



71) NOW, LET'S CHANGE THE
BACKGROUND COLOR; RIGHT-CLICK
TO SELECT IT. THIS WILL BE A
LITTLE TRICKY, ONLY BECAUSE WE
ARE GOING TO DUPLICATE THE
GROUND WHILE NOT MOVING IT.
THEN, WE'LL HAVE TO SELECT THE
ORIGINAL GROUND AND DELETE IT.



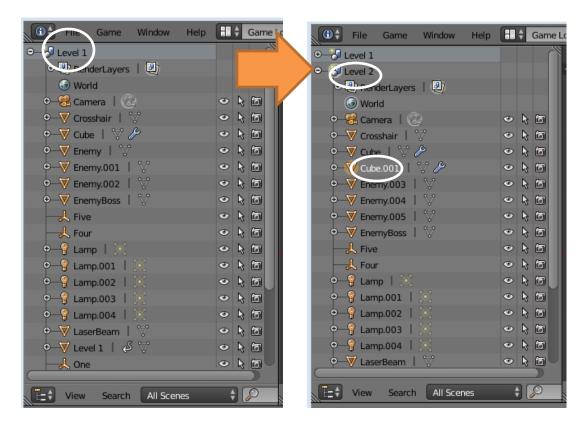
72) WITH YOUR BACKGROUND PLANE SELECTED, NOTICE THE OBJECT PANEL: MY BACKGROUND SHAPE IS CALLED 'CUBE'. PRESS 'SHIFT+D' TO DUPLICATE IT. PRESS 'ENTER' WITHOUT MOVING THE MOUSE TO LEAVE THE PLANE WHERE IT IS.



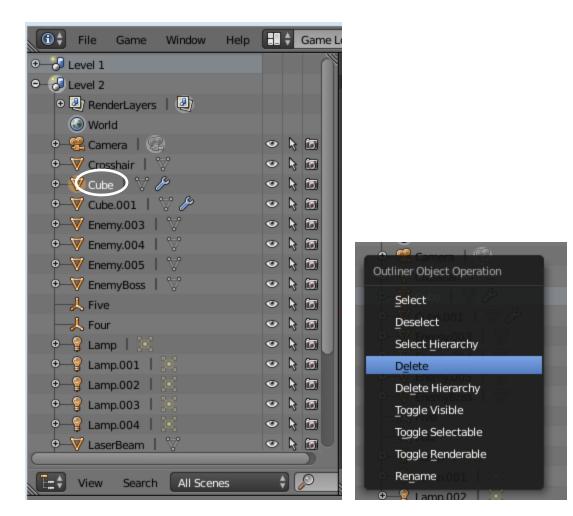
73) THE NEW BACKGROUND CUBE (OR PLANE) SHOULD BE SELECTED; ITS NAME SHOULD BE IN THE OBJECT TAB.



74) NOW WE HAVE TO DELETE THE OLD FLOOR. THE EASIEST WAY TO DO THIS IS TO LOCATE THE OUTLINER TAB. THE OUTLINER SHOWS YOU ALL OF YOUR OBJECTS IN A SCENE.

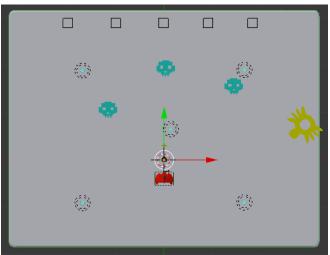


75) IF 'LEVEL 1' IS BEING DISPLAYED,
BE SURE TO SELECT 'LEVEL 2'
(CLICK ON THE - SIGN NEXT TO
'LEVEL 1). NOTICE THAT BECAUSE
WE HAVE OUR NEW FLOOR CUBE
SELECTED IN THE VIEWPORT, IT IS
ALSO HIGHLIGHTED IN THE
OUTLINER.

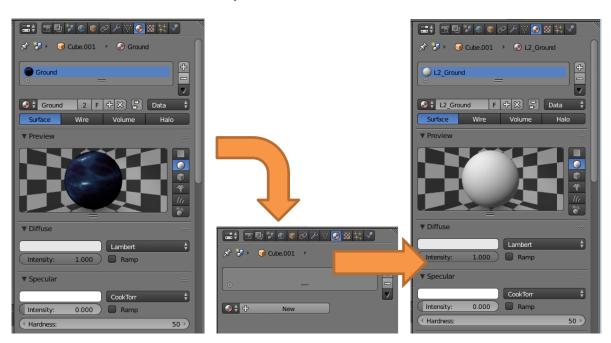


- 76) SELECT THE ORIGINAL CUBE (IT WAS TITLED 'CUBE'). IT SHOULD BE HIGHLIGHTED IN THE OUTLINER. RIGHT-CLICK AND SELECT 'DELETE'.
- 77) TEST YOUR GAME. MAKE SURE EVERYTHING IS WORKING.



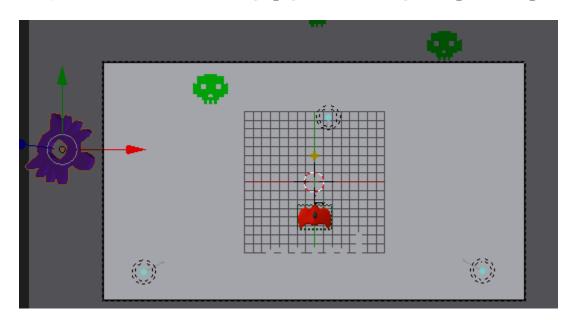


78) SELECT YOUR NEW FLOOR (IN THIS CASE, 'CUBE.001').

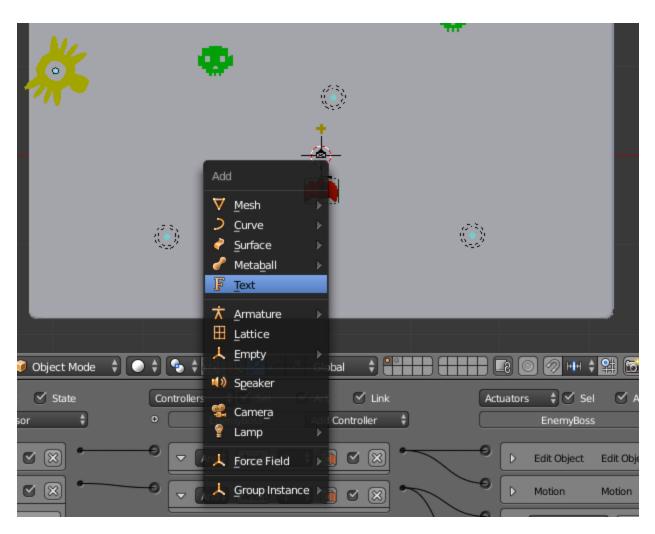


79) WITH THE FLOOR SELECTED, GO INTO THE MATERIALS TAB. REMOVE THE OLD MATERIAL AND ADD A NEW ONE. NAME IT 'L2_GROUND' OR SOMETHING SIMILAR.

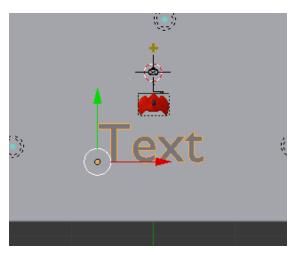
80) TEST YOUR GAME. YOUR FLOOR AND YOUR ENEMIES SHOULD ALL BE DIFFERENT COLORS FROM LEVEL 1.



81) YOU CAN ALSO DUPLICATE YOUR BOSS ENEMY AND CHANGE THE COLOR AS WELL. THEN YOU WILL BE ABLE TO SET IT TO TRIGGER 'LEVEL 3' WHEN HIT (IF YOU'D LIKE).

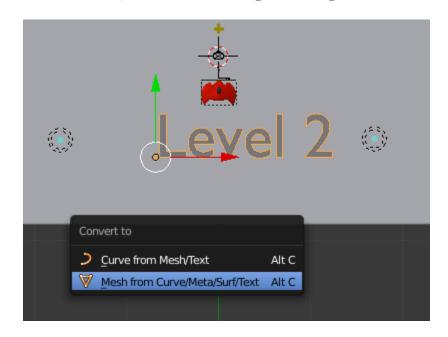


82) ALL WE HAVE TO DO NOW IS ADD OUR LEVEL 2 TEXT AND WE ARE DONE WITH LEVEL 2. PRESS 'SHIFT+A' TO ADD A TEXT OBJECT.

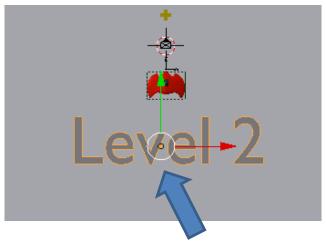




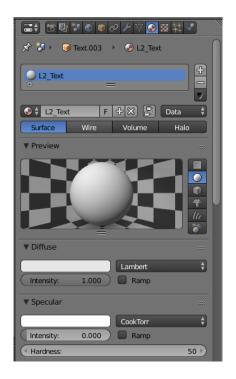
83) MOVE YOUR TEXT (G) TO WHERE YOU'D LIKE IT. PRESS 'TAB' TO ENTER EDIT MODE. DELETE THE TEXT AND TYPE 'LEVEL 2'.



84) PRESS 'ALT+C' AND CHOOSE 'MESH FROM CURVE/META/SURF/TEXT'.



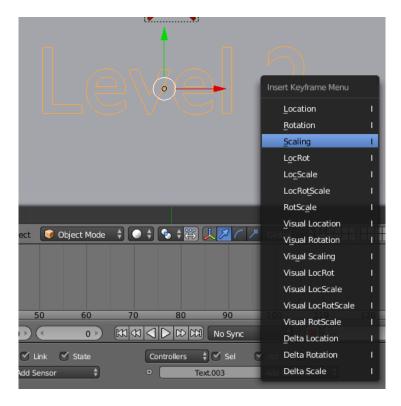
85) I CENTERED THE TEXT TO THE ORIGIN DOT BY PRESSING 'TAB', 'A' TO SELECT ALL OF THE LETTERS, AND 'G' TO MOVE THE LETTERS UNTIL THE DOT WAS IN THE CENTER.



86) WITH THE LETTERS STILL SELECTED, ADD A MATERIAL AND GIVE IT A NAME.



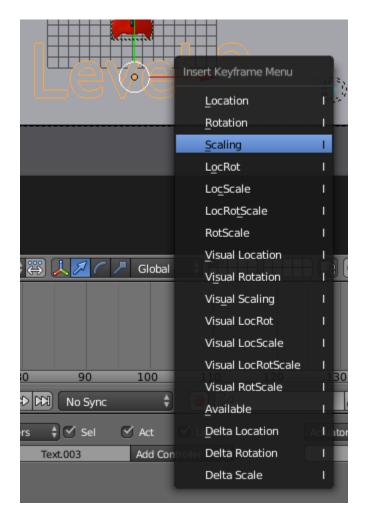
87) NOW, GO INTO YOUR TIMELINE. SET THE CURRENT FRAME TO 'ZERO'.



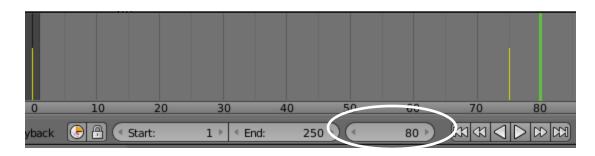
88) PRESS 'I' AND THEN SELECT 'SCALING' TO SET A KEY FRAME.



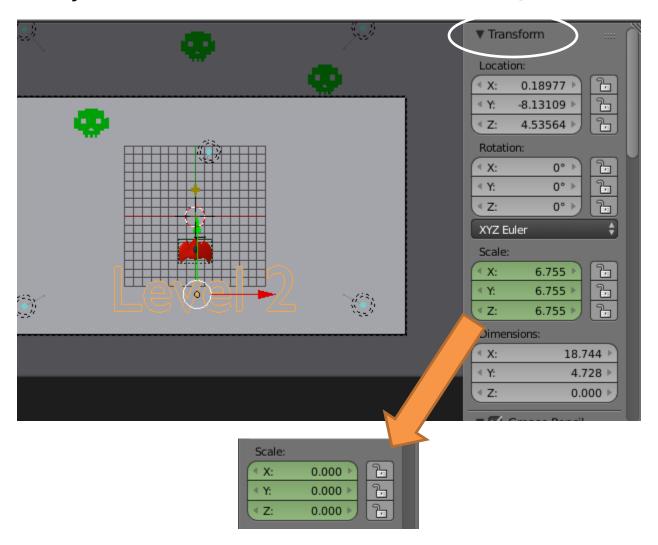
89) SET THE CURRENT FRAME TO 75.



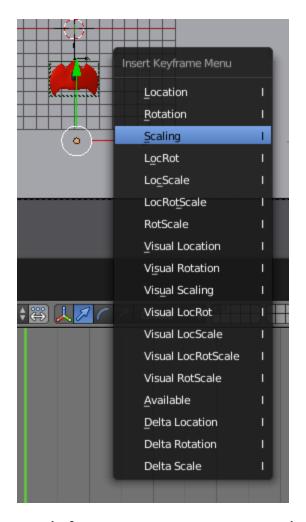
90) PRESS 'I' AND SELECT 'SCALING' TO SET A KEY FRAME.



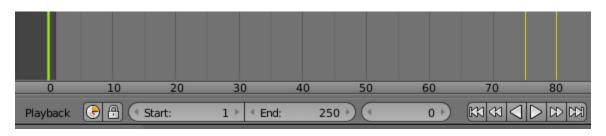
91) SET THE CURRENT FRAME TO 80.



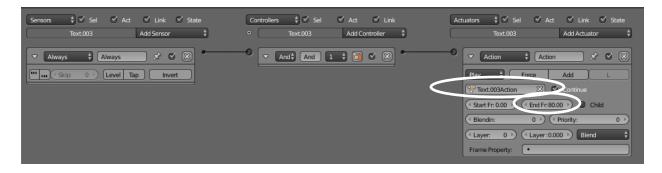
92) PRESS 'N' TO OPEN UP YOUR TRANSFORM TAB. CHANGE THE X,Y, AND Z IN THE SCALE BOX TO 'ZERO'.



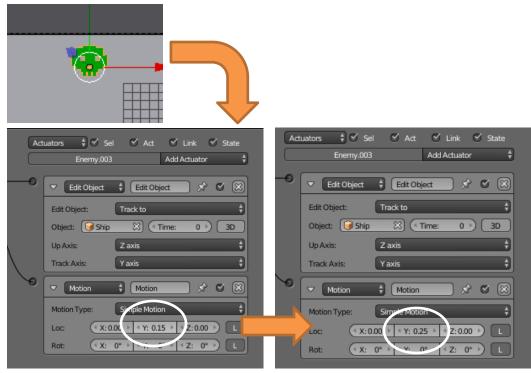
93) PRESS 'I' AND SELECT 'SCALING' TO ADD A KEY FRAME.



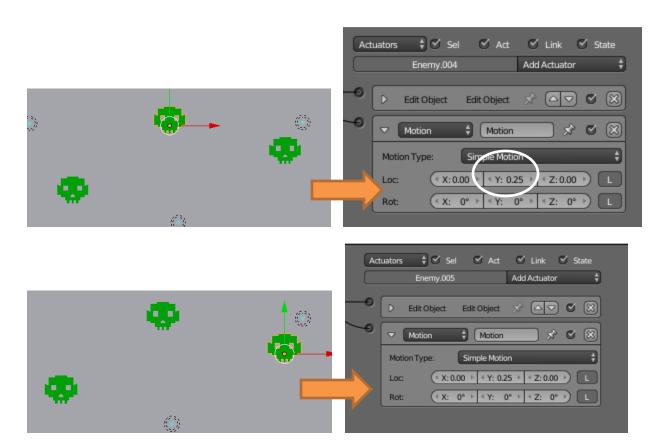
94)SET YOUR CURRENT FRAME BACK TO 'ZERO'.



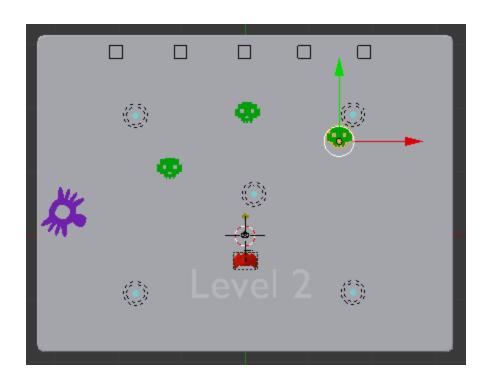
- 95) WITH THE 'LEVEL 2' TEXT STILL SELECTED, ADD AN 'ALWAYS' SENSOR, AN 'AND' CONTROLLER', AND AN 'ACTION' ACTUATOR. SELECT THE ANIMATION YOU JUST MADE (IN THIS CASE IT IS CALLED 'TEXT.003ACTOIN') AND CHANGE THE END FRAME TO 80. MAKE SURE ALL THREE BLOCKS ARE HOOKED UP.
- 96)PLAY YOUR GAME! LEVELS 1 AND 2 SHOULD NOW LOOK COMPLETELY DIFFERENT.



97) FROM HERE, YOU CAN START
PROGRAMMING LEVEL 2 TO MAKE IT
MORE DIFFICULT THAN LEVEL 1. FOR
EXAMPLE, IF YOU WANT TO MAKE
THE LEVEL 2 ENEMIES MOVE
FASTER, ADJUST THEIR SPEED IN
THEIR LOGIC BRICKS. SELECT AN
ENEMY AND THEN SET ITS SPEED IN
THE MOTION ACTUATOR.



98) SELECT THE OTHER ENEMIES AND REPEAT THE PROCESS: ADJUST THEIR SPEED IN THE MOTION ACTUATOR.



99)THAT'S IT!! YOU CAN NOW PROGRAM YOUR LEVELS HOWEVER YOU'D LIKE. YOU CAN MAKE 10 LEVELS THAT HAVE SUPER-FAST ENEMIES AT THE END. YOU CAN PROGRAM THE BOSS ENEMIES TO TAKE YOU TO SECRET LEVELS. YOU COULD ADD A 'YOU WIN!' SCREEN AFTER LEVEL 5. USE YOUR IMAGINATION!! PUSH YOURSELF: YOUR GAME WILL LOOK AND FEEL MORE AND MORE POLISHED THE MORE EFFORT YOU PUT IN.

NOTES

