**MAIN.PY PSEUDOCODE**

IMPORT ALL MODULES USED

SETUP THE DISPLAY

CREATE AND LOAD ALL MENU IMAGES AND BUTTONS

CREATE INITIAL GAME VARIABLES

CREATE MENU BOOLEAN CHECKS

WHILE THE GAME IS RUNNING

UPDATE THE FRAMERATE

IF THE PLAYER WANTS TO EXIT

EXIT THE GAME

DISPLAY MENU AND MENU BUTTONS

IF THE PLAYER HAS CHOSEN THE CHARACTER

LOAD THE CHARACTER INTO THE GAME

IF THE GAME HAS STARTED

IF THE LEVEL HAS BEEN LOADED

LOAD THE LEVEL

ELSE

RUN THE GAME

IF THE PLAYER HAS DIED

LOAD THE DEATH SCREEN

IF THE OPTIONS BUTTON HAS BEEN CLICKED

SHOW OPTIONS FOR DIFFICULTY

SHOW OPTIONS FOR AUDIO

SHOW BACK BUTTON

**TILE.PY PSEUDO CODE**

IMPORT ALL MODULES USED

DEFINE THE TILE CLASS WHICH INHERITS FROM THE PYGAME SPRITE CLASS

CREATE AN IMAGE

GET THE IMAGE'S RECTANGLE

DEFINE THE SCROLL FUNCTION

IF THE PLAYER IS AT A POINT NEAR THE END OF THE SCREEN TO THE RIGHT

STOP PLAYER MOVEMENT

MOVE THE TILE TO THE LEFT AT THE SPEED THE PLAYER WAS AT

ELIF THE PLAYER IS AT A POINT NEAR THE END OF THE SCREEN TO THE LEFT

STOP PLAYER MOVEMENT

MOVE THE TILE TO THE RIGHT AT THE SPEED THE PLAYER WAS AT

ELSE

THE PLAYER MOVES AT ITS ORIGINAL SPEED

DEFINE THE DRAW FUNCTION

DRAW THE IMAGE ONSCREEN

DEFINE THE UPDATE FUNCTION

CALL THE SCROLL FUNCTION

DEFINE THE WORLDTILE CLASS WHICH INHERITS FROM THE TILE CLASS

INITIALIZE THE PARENT CLASS

THE IMAGE OF THE TILE IS CHOSEN WHEN LOADED

DEFINE THE EXIT CLASS WHICH INHERITS FROM THE WORLDTILE CLASS

SET IMAGE TO THE EXIT IMAGE

RESIZE IMAGE ACCORDINGLY

DEFINE THE AMMO CLASS WHICH INHERITS FROM THE WORLDTILE CLASS

SET IMAGE TO THE AMMO IMAGE

RESIZE IMAGE ACCORDINGLY

DEFINE THE HEALTHBOX CLASS WHICH INHERITS FROM THE WORLDTILE CLASS

SET IMAGE TO THE HEALTH BOX IMAGE

RESIZE IMAGE ACCORDINGLY

**WORLD.PY PSEUDO CODE**

IMPORT ALL MODULES USED

DEFINE THE LEVEL CLASS

CREATE A SPRITE GROUP FOR THE PLAYER

CREATE A SPRITE GROUP FOR THE HEALTHBOXES

CREATE A SPRITE GROUP FOR THE ENEMIES

CREATE A SPRITE GROUP FOR THE BOSS

CREATE A SPRITE GROUP FOR THE AMMO BOXES

CREATE A SPRITE GROUP FOR THE FLOOR TILES

CREATE A SPRITE GROUP FOR THE DECORATIONS

CREATE A SPRITE GROUP FOR THE THE EXIT

CREATE A SPRITE GROUP FOR THE THE CONSTRAINTS

DEFINE A FUNCTION TO LOAD IN THE SPRITES INTO THE SPRITE GROUP

CREATE A SPRITE GROUP

FOR EACH CELL THE LOADED CSV

IF THE VALUE IN THE CSV CELL

IF WE ARE LOADING THE PLAYER

ADD THE PLAYER TO THE SPRITE GROUP

IF WE ARE LOADING THE HEALTH BOXES

ADD THE HEALTH BOXES TO THE SPRITE GROUP

IF WE ARE LOADING THE ENEMIES

ADD THE ENEMIES TO THE SPRITE GROUP

IF WE ARE LOADING THE BOSS

ADD THE BOSS TO THE SPRITE GROUP

IF WE ARE LOADING THE AMMO BOXES

ADD THE AMMO BOXES TO THE SPRITE GROUP

IF WE ARE LOADING THE FLOOR TILES

ADD THE FLOOR TILES TO THE SPRITE GROUP

IF WE ARE LOADING THE DECORATIONS

ADD THE DECORATIONS TO THE SPRITE GROUP

IF WE ARE LOADING THE EXIT

ADD THE EXIT TO THE SPRITE GROUP

IF WE ARE LOADING THE CONSTRAINTS

ADD THE CONSTRAINTS TO THE SPRITE GROUP

RETURN THE SPRITE GROUP

DEFINE A FUNCTION FOR THE GAME LOGIC

IF THE PLAYER REACHES THE DOOR

LOAD THE NEXT LEVEL

IF THE PLAYER PICKS UP A HEALTH BOX

ADD HEALTH TO THE PLAYER

DELETE THE HEALTH BOX

IF THE PLAYER PICKS UP AN AMMO BOX

ADD AMMP TO THE PLAYER

DELETE THE AMMO BOX

IF THE PLAYER HAS KILLED AN ENEMY

INCREASE THE PLAYER'S SCORE

DEFINE A FUNCTION TO RUN THE GAMME

DRAW ALL THE SPRITES LOADED

RUN THE GAME LOGIC

DRAW THE PLAYER

UPDATE ALL THE SPRITES WITH RESPECT TO THE PLAYER

UPDATE THE COLLISION OF BULLETS BETWEEN PLAYER AND ENEMIES AND THE GROUND

**ENEMIES.PY PSEUDO CODE**

IMPORT ALL THE MODULES USED

DEFINE A CHARACTER CLASS WHICH INHERITS FROM THE TILE CLASS

CHARACTERS WILL HAVE DIFFERENT BULLETS

CHARACTERS WILL HAVE DIFFERENT IMAGES

BOOLEAN CHECKS FOR THE CHARACTERS STATUS IN THE GAME

CREATE A SPRITE GROUP FOR THE BULLETS

STORE THE IMAGES IN A DICTIONARY WITH THE KEY BEING THE ANIMATION BEING CALLED

DEFINE A FUNCTION THAT LOADS THE IMAGES OF THE ANIMATION

CREATE A LIST FOR THE IMAGES

THE NUMBER OF FRAMES IS EQUAL TO THE NUMBER OF IMAGES IN THE FOLDER

LOAD ALL THE IMAGES IN THE FOLDER AND RESIZE THEM

STORE THE LOADED IMAGES IN THE LIST

RETURN THE LIST

DEFINE A FUNCTION FOR THE CHARACTER TO SHOOT

CREATE A BULLET

POSITION THE BULLET CORRECTLY

ADD IT TO THE BULLETS GROUP

DEFINE A FUNCTION TO UPDATE THE ATTACK STATE

IF THE CHARACTER IS ATTACKING AND THE COOLDOWN IS 0

CALL THE SHOOT FUNCTION

RESET THE COOLDOWN

DEFINE A FUNCTION FOR THE ANIMATION

INCREMENT THE ANIMATION INDEX

IF THE ANIMATION INDEX IS LESS THAN THE AMOUNT OF IMAGES

IF THE CHARACTER IS ALIVE

RESET THE ANIMATION INDEX

ELSE

THE ANIMATION INDEX IS EQUAL TO THE POSITION OF THE LAST IMAGE IN THE LIST

SET THE IMAGE

DEFINE A DRAW FUNCTION

DRAW THE BULLETS

DRAW THE CHARACTER

DEFINE AN ENEMY CLASS THAT INHERITS FROM CHARACTER

CREATE ALL THE ANIMATION STATES

ATTATCH THE CHOSEN DIFFICULTY TO THE ENEMY VARIABLES

SET THE LOADED ENEMY IMAGE CORRECTLY

DEFINE A FUNCTION FOR THE AI

IF THE ENEMY HEALTH IS 0

THE ENEMY IS DEAD

IF THE ENEMY COLLIDES WITH A CONSTRAINT

CHANGE DIRECTION

IF THE ENMY IS ATTACKING

STOP MOVING

ANIMATE THE ATTACK

ELSE

CONTINUE TO MOVE

IF THE ENEMY IS MOVING

ANIMATE THE WALK

IF THE ENEMY IS DEAD

ANIMATE THE DEATH

IF THE ENEMY IS ALIVE AND IT MEETS THE PLAYER

ATTACK THE PLAYER

DEFINE A SPECIAL DRAW ENEMY FUNCTION

DRAW THE ENEMY

DRAW THE BULLETS

DEFINE AN UPDATE FINCTION

CALL THE SCROLL FUNCTION

CALL THE ANIMATE FUNCTION

CALL THE AI FUNCTION

IF THE ENEMY IS ALIVE

UPDATE THE ENEMY ATTACK

UPDATE ALL THE BULLETS WITH RESPECT TO THE PLAYER

DEFINE A BOSS CLASS THAT INHERITS FROM THE ENEMY CLASS

INITIALIZE THE PARENT CLASS

SET A SPECIAL HEALTH AMOUNT

DEFINE A SPECIAL SHOOT FUNTION FOR THE BOSS

CREATE 2 BULLETS

POSITION THE BULLETS CORRECTLY

ADD THE BULLETS TO THE BULLET GROUP

DEFINE A SPECIAL AI FUNTION FOR THE BOSS

FLIP THE IMAGE OF THE BOSS ACCORDINGLY

FLIP THE ATTACK ZONE FOR THE BOSS ACCORDINGLY

CALL THE PARENT CLASS AI METHOD

DEFINE A DRAW METHOD FOR THE BOSS

DRAW THE HEALTHBAR

CALL THE PARENT CLASS DRAW METHOD

DEFINE A ROBOT CLASS THAT INHERITS FROM THE ENEMY CLASS

INITIALIZE THE PARENT CLASS

SET A SPECIAL HEALTH AMOUNT

DEFINE A SPECIAL AI FUNTION FOR THE ROBOT

FLIP THE IMAGE OF THE BOSS ACCORDINGLY

FLIP THE ATTACK ZONE FOR THE BOSS ACCORDINGLY

CALL THE PARENT CLASS AI METHOD

DEFINE A DRAW METHOD FOR THE ROBOT

DRAW THE HEALTHBAR

CALL THE PARENT CLASS DRAW METHOD

**PLAYER.PY PSUDO CODE**

IMPORT ALL MODULES USED

DEFNIE THE PLAYER CLASS WHICH INHERITS FROM THE PYGAME SPRITE CLASS

SET THE CONDITIONS FOR THE ANIMATION

SET THE CONDITIONS TO LOAD THE IMAGES

GET THE SIZE OF THE IMAGES

CREATE THE VARIABLES FOR PLAYER MOVEMENT

CREATE THE VARIABLES FOR THE PLAYER COMBAT

DEFINE A FUNCTION TO CONTROLL PLAYER MOVEMENT

IF THE PLAYER PRESSES SPACE

THE PLAYER SHOOTS

IF THE PLAYER PRESSES W

THE PLAYER JUMPS

ELIF THE PLAYER PRESSES A

THE PLAYYER MOVES LEFT

ELIF THE PLAYER PRESSES S

THE PLAYER MOVES RIGHT

ELSE

THE PLAYER IS IDLE

DEFINE A FUNCTION FOR THE PLAYER TO SHOOT

IF THE PLAYER HAS AMMO

DECREMENT THE PLAYERS AMMO

CREATE THE BULLET

ADD THE BULLET TO THE BULLETS GROUP

DEFINE A FUNCTION FOR PLAYER VERTICAL COLLISION WITH THE LEVEL

IF THE PLAYER HITS A TILE FROM THE BOTTOM

THE PLAYER'S TOP COORDINATES = THE TILE'S BOTTOM COORDINATES

IF THE PLAYER HITS A TILE FROM THE TOP

THE PLAYER'S BOTTOM COORDINATES = THE TILE'S TOP COORDINATES

DEFINE A FUNCTION FOR PLAYER HORIZONTAL COLLISION WITH THE LEVEL

IF THE PLAYER HITS A TILE FROM THE LEFT

THE PLAYER'S LEFT COORDINATES = THE TILE'S RIGHT COORDINATES

IF THE PLAYER HITS A TILE FROM THE RIGHT

THE PLAYER'S RIGHT COORDINATES = THE TILE'S LEFT COORDINATES

DEFINE A FUNCTION FOR THE GRAVITY

PLAYER'S Y COORDINATE IS INCREASED AT THE RATE OF THE GRAVITY

DEFINE A FUNCTION TO UPDATE THE ANIMATION

IF THE PLAYER IS IN THE AIR

IF THE PLAYER IS FALLING

SHOW THE FALLING ANIMATION

IF THE PLAYER IS RISING

SHOW THE RISING ANIMATION

DEFINE A FUNCTION THAT LOADS THE IMAGES OF THE ANIMATION

CREATE A LIST FOR THE IMAGES

THE NUMBER OF FRAMES IS EQUAL TO THE NUMBER OF IMAGES IN THE FOLDER

LOAD ALL THE IMAGES IN THE FOLDER AND RESIZE THEM

STORE THE LOADED IMAGES IN THE LIST

RETURN THE LIST

DEFINE A FUNCTION FOR THE ANIMATION

INCREMENT THE ANIMATION INDEX

IF THE ANIMATION INDEX IS LESS THAN THE AMOUNT OF IMAGES

IF THE CHARACTER IS ALIVE

RESET THE ANIMATION INDEX

ELSE

THE ANIMATION INDEX IS EQUAL TO THE POSITION OF THE LAST IMAGE IN THE LIST

SET THE IMAGE

DEFINE A DRAW FUNCTION

DRAW THE PLAYER ONSCREEN

DRAW THE BULLETS

DEFINE AN UPDATE FUNCTION

CALL THE UPDATE ANIMATION FUNCTION

CALL THE ANIMATE FUNCTION

CALL THE CONTROLLS FUNCTION

CALL THE VERTICAL\_COLLISION FUNCTION

CALL THE HORIZONTAL\_COLLISIN FUNCTION

UPDATE EACH BULLET WITH RESPECT TO THE PLAYER

IF THE PLAYER'S HEALTH = 0 OR THE PLAYER HAS FALLEN THROUGH A GAP

THE PLAYER IS DEAD

**BULLET.PY PSEUDO CODE**

IMPORT ALL MODULES

DEFINE THE BULLET CLASS WHICH INHERITS FROM THE TILE CLASS

INITIALIZE THE PARENT CLASS

SET THE IMAGE OF THE BULLET

DEFINE THE VARIABLES FOR THE MOVEMENT OF THE BULLET

DEFINE A DRAW FUNCTION

DRAW THE BULLET IMAGE ONSCREEN

DEFINE THE COLLISION FUNTION FOR THE BULLET

IF THE BULLET HITS A TARGET AND THAT TARGET IS ALIVE

TAKE HEALTH FROM THE TARGET

DELETE THE BULLET

ELSE

DELETE THE BULLET APON COLLISION

DEFINE THE UPDATE FUNTION

CALL THE SCROLL FUNTION

MOVE THE BULLET ONCE DRAWN ON SCREEN

IF THE BULLET MOVES OFFSCREEN

DELETE THE BULLET

**SETTINGS.PY PSEUDO CODE**

IMPORT ALL MODULES USED

SET THE SCREEN WIDTH CONSTANT

SET THE SCREEN HEIGHT CONSTANT

SET THE BUTTONS FOR THE MENUS

LOAD ALL IMAGES USED IN MENUS AND IN GAME

LOAD ALL THE AUDIO USED IN THE GAME

DEFINE A FUNCTION TO SELECT A LEVEL

CREATE A DICITONARY WHERE THE KEY IS THE TYPE OF OBJECT BEING LOADED AND THE VALUE IS THE PATH TO THE CSV

RETURN THE DICTIONARY

DEFINE A FUNCTION TO DRAW TEXT

DRAW TEXT ON SCREEN

DEFINE A FUNCTION TO IMPORT A CSV LAYOUT

CREATE A LIST TO STORE THE CSV

GO TO THE SPECIFIED PATH AND ADD EACH VALUE TO THE LIST

RETURN THE LIST

DEFINE A FUNCTION TO GET THE TILES FROM THE TILESET IMAGE

LOAD IN THE TILESET IMAGE

RESIZE THE TILESET IMAGE

STORE THE SIZE OF THE RESIZED IMAGE

CREATE A LIST FOR ALL THE IMAGES THAT WILL COME FROM THE TILESET

WITHIN THE LENGTH AND WIDTH OF THE IMAGE

SELECT A 32 BY 32 AREA OF THE TILESET

CREATE A 32 BY 32 SIZED SURFACE AND SET THE IMAGE TO IT

ADD IT TO THE LIST

RETURN THE LIST

DEFINE THE PAUSE FUNTION

IF THE PLAYER WANTS TO QUIT

QUIT THE GAME

IF THE PLAYER PRESSES M

RESUME THE GAME

DRAW THE PAUSE MENU

IF THE RESUME BUTTON IS CLICKED

RESUME THE GAME

IF THE EXIT BUTTON IS CLICKED

EXIT THE GAME

UPDATE THE DISPLAY

DEFINE THE FUNCTION TO CHANGE VOLUME OF AUDIO

SET THE VOLUME OF EACH AUDIO ITEM TO THE SPECIFIED VOLUME LEVEL

DEFINE THE FUNCTION TO CHANGE VOLUME OF MUSIC

SET THE VOLUME OF THE MUSIC TO THE SPECIFIED VOLUME LEVEL