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|  | | **School of Creative and Digital Industries** | | |
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| **COM4008Programming Concepts: PR1** | | | | |
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| **GitHub Repository Link:** |  | | | |

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## The Aim of your Game (1 page maximum)

This section is an introduction to the game that you and your group have made. It is important that you can articulate the game idea. You should specifically state the style and genre of your game, the background game story for the level(s) you have developed, the objective for the game player(s). You should also reflect on your individual contribution to creating the game idea and how you interacted with the other group members.

Write your reflection here:

Our game is about a snake gaining as much as points as possible once it eats the apple. Once it eats the apple, the player’s points will increase, and so will the length of the snake.

The **genre** of the game is a snake.

The **style** of the game is that once the snake eats up the apple, the length of the snake will increase.

The **background game** story revolves around the snake eating the apple, whilst moving on the grass. The player uses the keyboard’s arrows to move up and down or left and right so they can easily catch the apple.

**Objective for the game player:**

The player has to use the arrows on their keyboard so they can move the snake in the following directions: up & down, left & right. This allows the player to succeed in the game.

The concept of our game is very straightforward. The player only has to use the arrows on their keyboard in order to increase the length of the snake plus their score. However, the player has to be careful not to let the snake above the screen since the game has been set boundaries. The game will come to an end if the snake goes up to the very top, so it can become a bit challenging for the player as the pace of the snake is fast so they would have to play very cautiously.

As a group, we interacted with each other through Whatsaap. This is one of the easiest ways to communicate with each other. We spoke about how we can complete the coding and we spoke about what role each member can have. One role of the members was to code the game, 2 of us creating a presentation, and 2 of us helping to complete the word document. This was the simple way of us coping with how to complete the work.

I was asking the main coder, Raja, how the game was created and he knew what the requirements were so I asked him in person in order to solve my problem. We all agreed together that these are the appropriate requirements for our game.

Reflecting on my contribution, I feel like as an individual, working on the documentation is the easiest for me since this is my strength.

## The Game Requirements (1 page maximum)

In this section you need to list the requirements of your game and put these at the top of the section as a Bullet List(please refer to the Space Invader demo from the lecture materials). This list should be the same for everyone in the group.

Below this list you need to provide a written reflection on what yourcontribution was to the establishment of each requirement within the group.Reflect on why these requirements were selected by the group and consider if these were the mostappropriate requirements for the game overall. Reflect onif and how the requirements changed over the development process.Would you do something different if you had the opportunity to do the assignment again?

Write your requirements list and reflection here:

**Creating the design of the game:**

This was quite straightforward for everyone since the main coder of our group wanted to create a genre similar to a snake, and we all agreed. There was no design as our coder thought that going with the flow during the coding process was the easiest to do.

**Background:**

We downloaded an image from Google for the background: so the grass. This is because it was much easier for us to implement and it was not time consuming. We used the“pygame.image.load”function to upload background image.

**Music:**

We downloaded background music from Google and uploaded in our game using the “pygame.mixer.init()” function. This was appropriate for the game as it was unchallenging.

**Apple:**

We downloaded an image of an apple from Google and uploaded it onto our game using the “pygame.image.load” function. This made it easier for us to create the apple instead of having to do it manually. This was all simply agreed by the group since it was very basic to accomplish.

**Creation of the snake:**

We downloaded a block image from Google and then we used pygame.image.load function to upload the image and then we increased the length of the snake using the“self.length” function.

We all agreed as a group that these were appropriate requirements since we did not like to go through with a game that seems complex and much more advanced.

**Would we do something different if we had the opportunity to do the assignment again?**

We maybe would have come up with another idea of how to create the game and this would change the project completely. One idea we maybe would have come up with in the future is creating a game similar to the Call of Duty Zombies: a player attempting to shoot the zombies so they can get through to the next rounds.

## Reflection on Your Role in the Group (1 page maximum)

In this section your need to reflect on what your role was in the group and how you established that role. You need to discuss how the group divided up the work between the group members and your contribution to this process. How did you communicate the objectives of your role to the rest of the group e.g. how did you go about organising your commits via GitHub and letting the other group members know what you had been working on. You need to reflect on the following questions: What was the significance of your contribution to the game design? What was the significance of contribution to the development of the game code?Can you discuss specific code that you worked on or other game elements that you created? How would you evaluate your role in the group?

­­­­­­­­­­­­­­­­­­Write your reflection here:

My role in the group is to communicate with the rest of my group members effectively in order to know the progress of our game. However, my main role is to create the documentation.

The group divided up the work between the group members like this:

One member doing the coding, one member working on the group presentation along with another member helping them,

2 members working on the documentation and sharing it with the rest of the group. My contribution to this process is that I agreed with my group about what they wanted to do. I was happy with documenting with someone else in my group as this is one of my strengths. 2 members working on the presentation- I was happy with this too, and one of my members was very strong in coding so I was communicating with him about the requirements and he was discussing them with me. This made it easier for me to gather the information and input them into the documentation.

Using GitHub was a bit of a complication for all of us since we did not know how to use it as a way to communicate, thus, we used Whatsaapas a means to communicate. I communicated with my group members either in person or using Whatsaap. The only objectives of my role was to complete the documentation and speak with my group members as to how they are getting on with their role.

Initially, there wasn’t a significance of my contribution to the game designsince one of my group members was very good at designing the snake called Slyther. He designed the game by going with the flow, using his knowledge.

The significance of contribution to the development of the game code is very important since the whole project is mainly based upon the game and the game revolves around the code. If one aspect of the game code is incorrect, the whole game would become irrelevant, thus it would need to be fixed.

I would evaluate my role in the group as this: I was an individual in the group communicating with my members as to how everyone is progressing with their role. My main role was to be working on the visuals of the game with another member. In the future, I will be contributing to a much more advanced role. However, I was very happy to be working on this role since I love documenting work.

## Reflection on the Game Development Process (1 page maximum)

In this section you need to reflect on how the group set about developing the actual game code and any game assets (sound FX, music, graphics, menus). If you are new to programming, how did you find the process of learning, whilst working on a game? If you already had some programming experience, how did you challenge yourself to learn more whilst work on the game? How did your group divide up the programming tasks? What problems did you encounter and have to solve programmatically? Were there any problems that you didn’t manage to solve? What would you add to your game if you could continue to develop it further? Did you have any issues with synchronising your code edits in GitHub?How did you manage code comments and the structure of your code? How did you use classes within your code? What parts of your code were the most challenging to develop and why?

­­­­­­­­­­­­­­­­­­Write your reflection here:

We already had some programming experience, however we did not have any experience with Python. We challenged ourselves to learn more by watching YouTube tutorials in order to get used to coding with the programming language. Furthermore, we received information from the help of Google

We divided our programming tasks in this way:

Everyone came up with a concept of the game and we all divide the roles for each person.

Raja did the basic coding. Then during the process of the coding, we found something that needed to be updated. Lhakpa updated the coding and added some new concepts of the game. Destiny did the visual effects, added the sound.

Amina and Vanesa did the documentation and Raja helped to get the information and references.

Finally, Lhakpa and Destiny did the powerpoint slides and everyone will get the chance to speak during the presentation.

We managed to code comments using the hashtag symbol and we managed the structure of the code by simply entering in the relevant codes and ran the source and it was successful.

The most challenging part of the code to develop was creating the snake, however, we eventually succeeded in the end. Apart from this, we did not have any problem with the coding. If we were to continue to develop the game further, we would add more levels and more obstacles.

## References

Under this section, please reference any sources that you used to help you in the game design and development. These might be references to game tutorials online, or royalty free game assets, or online or textbook code teaching/learning resources etc. Please use the Harvard referencing format (see online guide to referencing in Harvard at:<https://www.citethemrightonline.com/> (look for institution login and use your Uni login to access under the Bucks New University subscription).

Write your references here:

Reference for taking idea snake game:

<https://docs.replit.com/tutorials/python/build-snake-with-pygame>

Reference for apple is:

<https://nohat.cc/f/red-apple-fruits-png-transparent-images-clipart-icons-transparent-background-apple-clipart/m2K9A0m2A0K9b1A0-201907231217.html>

Reference for Background:

<https://www.google.com/search?q=dark%20green%20image%20for%20game&tbm=isch&tbs=rimg:CVYI2oE-ugTCYesncsXRkBCesgIVCgIIABAAKAE6BAgBEAFAAVW-g1I_1wAIA2AIA4AIA&hl=en&sa=X&ved=0CBoQuIIBahcKEwig7avypKWCAxUAAAAAHQAAAAAQDg&biw=1257&bih=598>

Reference for Sound is:

<https://uppbeat.io/sfx?rt=ppc_google_search_sfx_uk&utm_source=google&utm_medium=cpc&utm_campaign=search_sfx_uk&utm_content=659094315778&utm_term=free%20digital%20sound%20effects&gad=1&gclid=CjwKCAjwkY2qBhBDEiwAoQXK5VFY0OjvGCa74Wtbn9u0zGJ1OJrQzaJZEQAS7kXF3AZhuxK-r-dc-RoCTZ0QAvD_BwE>

## Appendix A: Code Snippets

Under this section, please list the code snippets that you specifically wrote and worked on during the development of the game.

Copy your specific code snippets here:

Our code snippets are as follows:

import pygame

from pygame.locals import \*

import time

import random

size = 40

## Appendix B: Game Code

Under this section, please put a copy of the game code. Use subheadings to indicate code from different files and indicate the folder/file structure that you used. We should be able to get to your code online via your link to your GitHub repository, but it is useful to have your code offline as well. This section will be the same for everyone in the group.

Copy and paste your full game code here:

# import is used to iclude path of a class or the entire package in program

import pygame

# pygame.locals used to include constants in game.

from pygame.locals import \*

import time

import random

size = 20

# Classes provides template for creating objects, which can bind code into data.

class apple:

# Python def keyword is used to define a function.

def \_\_init\_\_(self, parent\_screen):

# Self represents the instance of the class.

self.parent\_screen = parent\_screen

# pygame.image.load function call is used to load images.

self.image = pygame.image.load("resources/app.png").convert()

self.x = size \* 3

self.y = size \* 3

# draw() function is used to draw image on a specific point.

def draw(self):

self.parent\_screen.blit(self.image, (self.x, self.x))

# display.flip() is important everytime when we make any changes on display.

pygame.display.flip()

# move() function is used to move image in different sections of screen.

# random module is used to generate random numbers.

def move(self):

self.x = random.randint(1, 14) \* size

self.y = random.randint(1, 19) \* size

class Snake:

def \_\_init\_\_(self, parent\_screen, length):

self.parent\_screen = parent\_screen

self.block = pygame.image.load("resources/downmouth.gif").convert()

self.direction = "down"

self.body = pygame.image.load("resources/body.png")

self.length = length

self.x = [20] \* length

self.y = [20] \* length

def move\_up(self):

if self.direction != "down":

self.direction = "up"

self.block = pygame.image.load("resources/upmouth.gif")

def move\_down(self):

if self.direction != "up":

self.direction = "down"

self.block = pygame.image.load("resources/downmouth.gif")

def move\_left(self):

if self.direction != "right":

self.direction = "left"

self.block = pygame.image.load("resources/leftmouth.gif")

def move\_right(self):

if self.direction != "left":

self.direction = "right"

self.block = pygame.image.load("resources/rightmouth.gif")

def walk(self):

# self.prev\_x = self.x[0] # Save the previous head position

# self.prev\_y = self.y[0]

for i in range(self.length - 1, 0, -1):

self.x[i] = self.x[i - 1]

self.y[i] = self.y[i - 1]

if self.direction == "up":

self.y[0] -= size

elifself.direction == "down":

self.y[0] += size

elifself.direction == "right":

self.x[0] += size

elifself.direction == "left":

self.x[0] -= size

self.draw()

def draw(self):

# Draw the head

self.parent\_screen.blit(self.block, (self.x[0], self.y[0]))

# Draw the body segments

for i in range(1, self.length):

self.parent\_screen.blit(self.body, (self.x[i], self.y[i]))

pygame.display.flip()

def increase\_length(self):

self.length += 1

self.x.append(1)

self.y.append(1)

class Game:

def \_\_init\_\_(self):

pygame.init()

pygame.mixer.init()

self.play\_backgroud\_music()

self.surface = pygame.display.set\_mode((800, 600))

self.snake = Snake(self.surface, 1)

self.snake.draw()

self.apple = apple(self.surface)

self.apple.draw()

def render\_background(self):

bg = pygame.image.load("resources/background-image.png")

self.surface.blit(bg, (0, 0))

def is\_collision(self, x1, y1, x2, y2):

if x1 >= x2 and x1 < x2 + size:

if y1 >= y2 and y1 < y2 + size:

return True

return False

def display\_score(self):

font = pygame.font.SysFont("Arial", 30)

# score is set to snake length - 1 as length start with 1 as snake head.

score = font.render(

f"Score: {self.snake.length \* 10 -10}", True, (200, 200, 200)

)

self.surface.blit(score, (650, 10))

def show\_game\_over(self):

self.render\_background()

font = pygame.font.SysFont("Arial", 30)

line1 = font.render(

# score is set to snake length - 1 as length start with 1 as snake head.

f"Game Over! Score : {self.snake.length \* 10-10}",

True,

(200, 200, 200),

)

self.surface.blit(line1, (200, 300))

line2 = font.render(

f"To play again press Enter!",

True,

(200, 200, 200),

)

self.surface.blit(line2, (200, 350))

pygame.display.flip()

pygame.mixer.music.pause()

def reset(self):

self.snake = Snake(self.surface, 1)

self.apple = apple(self.surface)

def play\_backgroud\_music(self):

pygame.mixer.music.load("resources/bg.music.mp3")

pygame.mixer.music.play(-1, 0)

def play\_sound(self, sound):

sound = pygame.mixer.Sound(f"resources/{sound}.mp3")

pygame.mixer.Sound.play(sound)

def play(self):

self.render\_background()

self.snake.walk()

self.apple.draw()

self.display\_score()

pygame.display.flip()

# snake collidig with apple

if self.is\_collision(

self.snake.x[0], self.snake.y[0], self.apple.x, self.apple.x

):

self.play\_sound("crunch.1")

self.snake.increase\_length()

self.apple.move()

# snake colliding with itself

for i in range(2, self.snake.length):

if self.is\_collision(

self.snake.x[0], self.snake.y[0], self.snake.x[i], self.snake.y[i]

):

self.play\_sound("game-over")

raise "Collision Occured"

# snake colliding with boundries of window

if not (0 <= self.snake.x[0] <= 800 and 0 <= self.snake.y[0] <= 600):

self.play\_sound("game-over")

raise "Hit the boundry error"

def run(self):

running = True

pause = False

while running:

for event in pygame.event.get():

if event.type == KEYDOWN:

if event.key == K\_ESCAPE:

running = False

if event.key == K\_RETURN:

pygame.mixer.music.unpause()

pause = False

if not pause:

if event.key == K\_UP:

self.snake.move\_up()

if event.key == K\_DOWN:

self.snake.move\_down()

if event.key == K\_LEFT:

self.snake.move\_left()

if event.key == K\_RIGHT:

self.snake.move\_right()

elifevent.type == QUIT:

running = False

try:

if not pause:

self.play()

except Exception as e:

self.show\_game\_over()

pause = True

self.reset()

time.sleep(0.2)

if \_\_name\_\_ == "\_\_main\_\_":

game = Game()

game.run()