



COLLEGE OF BUSINESS, PEACE, LEADERSHIP AND GOVERNANCE

NCSC114: PRINCIPLES OF PROGRAMMING LANGUAGES

END OF FIRST SEMESTER EXAMINATION

NOVEMBER 2022

LECTURER: MUKHALELA B.U

TIME: 3 HOURS

Instructions to Candidate

Answer any five questions in the whole paper.

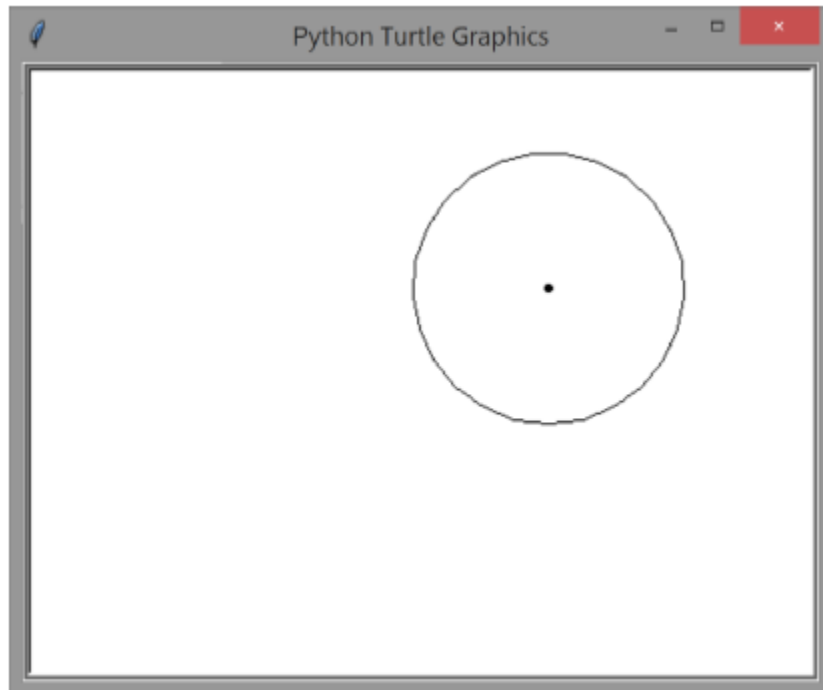
Each question carries 20 marks.

All codes are to be in Python as asked on each question.

Credit will be awarded for logical, systematic and neat presentations.

Question 1

Imagine you are employed as a Junior Python Developer by a gaming software development company and you are part of a team asked to produce a Darts game. Your specific task is to produce only the outer canvas (circle) of the game's GUI. Using python code, reproduce the canvas shown below this time using either the `geometry ()` or any other method.



(12)

- a. Imagine your next project after one in (a) above was to write a `story_generator` script to be included in a Kids-story-tell program, write a python program that generates a story:
Hint: make use of: **lists, random, if, and elif** components. **NB;** creativity shall earn you more marks. Write the python code in the allocated exam booklet. (8)

Question 2

Write a python program that allocates the number of leave days an employee has in their first year of employment, based on the number of months they have worked as number of days accumulated

2 days

4 days

6 days

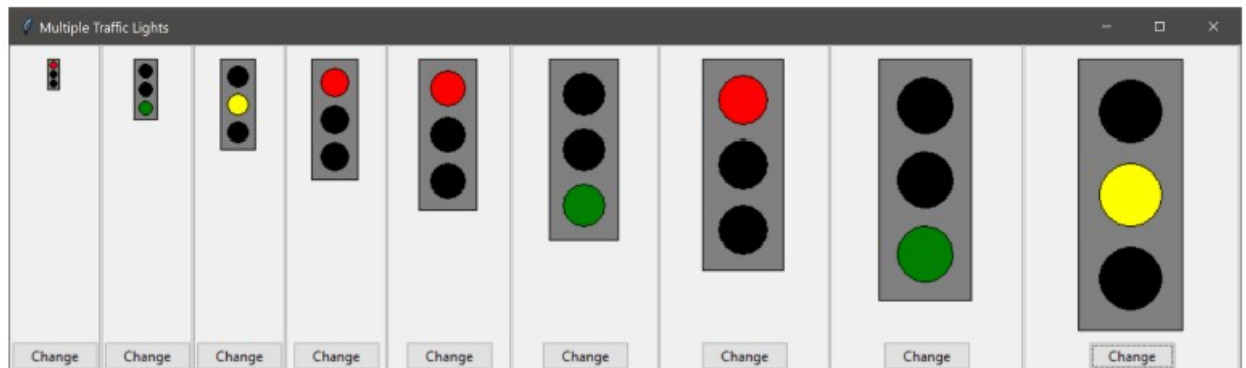
7 days

14 days

(20 marks)

Question 3

- a. Having just joined ZINARA's System development unit, you have been asked to code a program that control a city's traffic light's control center as shown below.



(12)

- b. Write a program that will reproduce the following shape produced by asterisks to be included as part of a zoo program to mimic allocated paddocks for animals in a zoo. The zoom attendant should be able to recommend his or her own dimension for a rectangular paddock that he she sees fit for the number of animals he or she wants stored in the virtual rectangular paddock.

(8)

Question 4

- a. You have been told that, the combobox is a dropdown list that provides a graphical way for the user to select one value of the list. To use the Combobox control, you need to import the tkinter.ttk module. Now develop a python script that creates a combobox that contains the names of the weekdays (5)
- b. Your Senior Front End developer has given you the scratch below for a client into Hatchery who want the proposed GUI shown below. Write a python program to produce a professional application with an orange background. Do not develop the backend algorithm for dates as this is to be handed over to a backend developer. (15)

VAP-Hatchery
Incubation Service Receipt

Name of Client

Contact Phone Number

Breed Incubated ☐ Chicken ☐ Duck

Date of Incubation

Expected Date of Hatch

Question 5

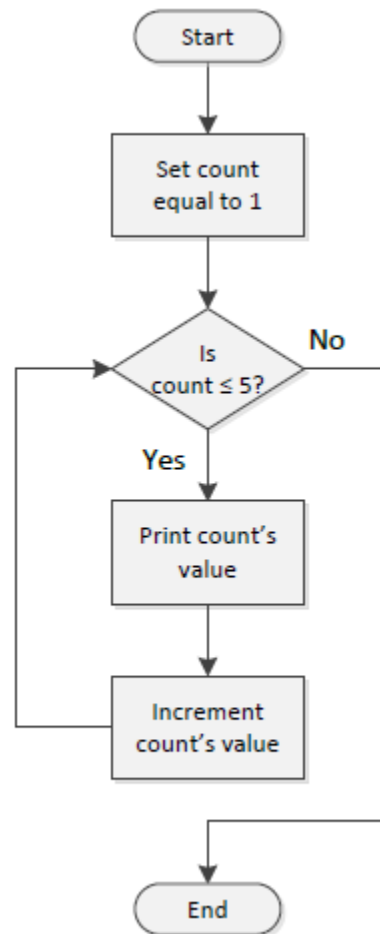
Define the following terms as used in OOP, cite examples:

- (i) Class
- (ii) Object

- (iii) Method
- (iv) Message
- (v) State (5)

a. Using a banking object-oriented analysis (OOA), demonstrate how the above terms can be mimicked on a banking system. (5)

b. Given the model below:



Write python code implementation for the while flow chart shown above. (4)

c. You were told that a Rabbit farmer wants all the Does (female rabbits to stay in even numbered Hatches or cages while the all Bucks (male rabbits are to occupy all odd numbered Hatches or cages. Write either python code snippet to model such scenarios using a **for loop**.

(6)

Question 6

Given below code snippet, determine what will the code below print when run?

```
x = 0
for i in range(3):
    for j in range(3):
        x = x + M[i][j]
print x
```

 (3)

- a. Write java code snippet for implementing any example of inheritance. (7)
- b. Write python code snippet for implementing any example of inheritance. (7)
- c. A senior developer advised you to make use of **incremental development** and **scaffolding** when developing slightly complex programs, briefly explain these two concepts. (3)

Question 7

On each below, use examples;

- (i) Compare and contrast use of indentation versus blocks {} in python and java.(5)
- (ii) Comment on portability of python as a programming language. (5)
- (iii) Using code snippet in java, exception-handling. (5)
- (iv) Differentiate between runtime-error versus syntactic error. (5)

End of Examination.