جامعة دمياط
Damietta University

Damietta University
Faculty of Science

Final Exam January 2024-2025
Course: Programming 1
Course Code: (س 103)

1st Level Computer Science+
Physics+
Physics &Computer Science
Time: **2 hours**
90 Marks
Monday 6-1-2025

Exam Instructions:

1- **All** questions are **compulsory.**
2- Use a **blue** or **black** pen to answer the questions.
3- Illustrate your answers with sketches wherever necessary.
4- **Assume suitable data** if necessary

The Exam consists of (2) pages - (3) questions

Question ONE: Predict the outputs of the following codes (30 Marks)

1
```
t, r=2.5679, 9.0
print(f"t={t:.3f} and r={r:.3f}")
```
(1 mark)

2
```
print(2*'X'+3*'#')
```
(1 mark)

3
```
x=2
if x<10:
   print(x)
   x+=1
```

4
```
def f(a, b=2, c=3):
   b=5
   return a+b-c
print(f(1,4))
```

5
```
x ,y = False, True
if (y and not x):
   print("Hi")
else:
   print("True")
```

6
```
x=1
if x<4:
   x+=1
   print(x)
```

7
```
r= 4
while (r < 100):
   r+=2
   if r>10:
      break
print(r)
```

8
```
for k in range(3):
   for j in range(-2,k+1,2):
      print(k,j)
```

9
```
a,b=20,20
a*=b
print(a,b)
```

10
```
message = 'Hello Python'
print('hello' not in message)
```

11
```
for f in range(5):
   print(f"{f/2:1.3f}")
```

12
```
a, b=20,20
c=a==b
d=a!=b
print(c,d)
```

13
```
x=y=0
while x<=5:
      x+=1
      y=x+1
print(x, y)
```

14
```
def f_count(n):
   print(n)
   if n > 2:
      f_count(n - 2)
f_count(15)
```

15
```
x=3.0//2.0 ==1.5
y=10%4== 2
h=10/4==1.5
print(x,y, h)
```

16
```
def fun(x,y):
   if x==2:
      return y
   else:
      return fun(x-2, x+y)
print(fun(6, 2))
```

Question TWO: (25 Marks)

a) Discuss function types in programming. (3 marks)

b) Design code to transfer **y** KB(Kilo Byte) into bits (where 1KB=1024byte, 1byte=8bits) (4 marks)

c) If S= 1+ 1/2! - 1/3! + 1/4!- 1/5! + ...+$(-1)^n$/n!. Write a program that allows the user to enter the **n** value and to display the resulting value, where **n!** is the **n** factorial. (9 marks)

e) Write code to convert polar coordinates **r, theta** الاحداثيات القطبية into cartesian coordinates **(x, y)** الاحداثيات الكارتيزية and vice versa والعكس . (9 marks)

hint:

math library include functions **sin**, **cos**, **atan2** (means $\tan^{-1}$), **radians** (convert angle from different degrees into radians), **degrees** (convert angle from radians into degree)

x= r cos(theta) **y= r sin**(theta) **r=**$\sqrt{x^2 + y^2}$ **theta= tan^{-1}(y, x)** in degrees

Question THREE: (35 Marks)

a) Use **while** statement to print the sequence 500, 495, 490,...,, 20. Except 250 and 100. (4 marks)

b) Create a function **Odd(c)**, checks if **c** is an odd number. The main code ask the user to input numbers one by one, use **Odd**(c) and compute the average of the entered odd numbers only, stop entering when the user input ZERO. (5 marks)

c) Print the numbers 2, 3, 4, ..., 99 using function **recursion**. (8 marks)

d) - Design **CalculateDiscount** function, with two arguments **price** and **discountPercentage** the function returns the discount amount by EGP.

- In the main code, the user input the item name, itemPrice, discountPercentage, use the **CalculateDiscount** function, display the priceAfterDiscount.
- Repeat asking to input more items data, stop when the item name is 'X'. (9 marks)

e) Create a Python code to calculate $\sum_{y=1}^{5} \sum_{x=0}^{10} xy$ using **nested for** loop. (9 marks)

With my best wishes *Examiner: Dr. Heba Hamed El Hadidi*