Department of Computer Science & Engineering (CSE)		
INDEPENDENT UNIVERSITY, BANGLADESH (IUB)		
First Assessment Test		
Course Code: CSC 101	**Course Title: Introduction to programming**	**Semester: Summer 2022**
Set: A	Time: 2 Hours	Date: 17.11.2022

General Instructions:

1. Answer **all the questions** in the answer script. Do not write anything on the question paper.
2. Write your **name, Student id, Section and set no** clearly on top of your answer script. Take help from the invigilator in case you need assistance.
3. **Return** the **answer script and the question paper** to the invigilator at the end of your exam.
4. Marks on the right margin indicate full marks.

Specific Instructions:

1. **Sign the Attendance Sheet**. Otherwise, if your answer script is lost you can't claim your attendance.
2. No Mobile / Electronic Devices are allowed in the exam hall. Switch off your mobile phone and put it in your bag.
3. Use of Calculator is STRICTLY prohibited.

1. Trace out the output of the following code: (Marks: 04)

```
x = int(input("Enter a number: "))
y = 1
z = 0

while 2 * y <= x:
    y = 2 * y
    z += 1

print(y, z)
```

Write the output of the code for the following inputs:

```
a. 1
b. 6
c. 19
d. 39
```

2. Trace out the output of the following code: (Marks: 03)

```
x = int(input("Enter a number: "))
y = int(input("Enter a number: "))
```

```
z = y

while x%z == 0:
    print(f"({x}, {z})")
    x -= z
    z += 1

print(x, y, z)
```

Write the output of the code for the following inputs:

```
a. 12, 4
b. 14, 2
c. 27, 3
```

3. Check out the following code: (Marks: 04)

```
x = int(input("Enter a number: "))
y = int(input("Enter a number: "))
z = 4

if x+y >= 10:
    z = z + 1
else:
    z = z + 9

if z <= y:
    y += 1

print(x, y, z)
```

Write the output of the code for the following inputs:

```
a. 3, 20
b. 4, 5
c. 5, 5
d. 6, 10
```

4. Check out the following code: (Marks: 04)

```
a = int(input("Enter a number: "))
b = int(input("Enter a number: "))

if a * 2 < b:
    a = a * 3
```

```
elif a > b:
    b = b + 3
if b < a:
    b += 1
else:
    a -= 1

print(a, b)
```

Write the output of the code for the following inputs:

```
a. 10, 2
b. 3, 8
c. 4, 4
d. 10, 30
```

5. Solve the following problem: (Marks: 05)

Take 2 intergers from the user first integer represents the month (1 for January, 2 for February, etc, up to 12 for December) and the second integer represents the day (a value between 1 and 31) of the month.

Take 2 more integers from the user, the first integer represents the month (1 for January, 2 for February, etc, up to 12 for December) and the second integer represents the day (a value between 1 and 31) of the month.

Now, you have to write a program that will tell you whether or not the first date comes before the second date.

Sample Input:

```
Enter the first month: 6
Enter the first day: 3
Enter the second month: 9
Enter the second day: 20
```

Sample Output:

```
June 3 comes before September 20
```

6. Solve the following problem: (Marks: 05)

Take 2 real numbers from the user. The first number represents the x coordinate of a point and the second number represents the y coordinate of the point.

Write a program that will tell you in which quadrant the point lies. (Assume that the x and y axes are horizontal and vertical, respectively.)

```
                    ^ y-axis
                    |
                    |
                    |
         Quadrant 2 |  Quadrant 1
                    |
<-------------------+-------------------> x-axis
                    |
         Quadrant 3 |  Quadrant 4
                    |
                    |
                    |
                    V
```

If the point lies on the x-axis or y-axis, then print "The point lies on the x-axis" or "The point lies on the y-axis" respectively. If the point lies on the origin, then print "The point lies on the origin".

Sample Input:

```
Enter the x coordinate: 3
Enter the y coordinate: 4
```

Sample Output:

```
The point lies in Quadrant 1
```

7. Consider the following values for the variables x, y, z and b: (Marks: 05)

```
x = 27
y = -1
z = 32
b = False
```

Write the result of the following expressions:

```
(x > y) and (y > z)
not (x % 2 == 0)
b and not b
b or not b
(x < y) == b
not (x / 2 == 13) or b or (z * 3 == 96)
not ((x > 0) and (y < 0))
x + y > 0
y * y <= z
y // y == 1
```