EMAT10007 - Introduction to Computer Programming

Class Test: Elementary Concepts

Overview

- **26th October** is the "Elementary Concepts" class test. You will be tested on your understanding of the core principles of programming, including the topics covered so far in the labs.
- The test will be multiple choice and we will be adding some additional examples on Blackboard early next week for you to practice with before the test.
- If you're wondering "where are the answers to the exercises?", look to the Python console! The best way to revise for this test is to work through the examples in the Python console, and to modify the examples until you understand what the program is doing.

Practice exercises

Variable assignment

1. Predict the **value** of B:

```
A = "10"
B = 5
B = A
A = 1
```

☐ 5 ☐ 10 ☐ "10" ☐ 1

2. Predict the **value** of A:

```
A = 2
B = 3
A = "B"
B = 1
```

☐ 2 ☐ 3 ☐ 1 ☐ "B"

3. Predict the **value** of C:

```
A = 0
B = "True"
C = B == A
```

☐ True ☐ False ☐ 1 ☐ 0

4. Predict the **value** of C:

```
A = 1.0
B = False
C = B = A
```

☐ True ☐ False ☐ 1.0 ☐ 0.0

5. Predict the **value** of C:

```
A = True and False
B = False
C = B = A
```

☐ True ☐ "True" ☐ False ☐ "False"

6. Predict the **value** of C:

```
A = True and False
B = False and True
C = A and B
```

☐ True ☐ "True" ☐ False ☐ "False"

7. Predict the **value** of C:

```
A = 0
B = False
C = A != B
```

☐ True ☐ 1 ☐ False ☐ 0

8. Predict the **value** of C:

```
A = 1
B = 0
C = A or B
```

☐ True ☐ 1 ☐ False ☐ 0

9. Predict the **value** of B:

```
A = ("Cheese", "Butter")
B = isinstance(A, tuple)
```

☐ `Tuple` ☐ `False` ☐ `True`

Types

1. Predict the **type** of A:

   (a) `A = "False"`
   ☐ String ☐ Boolean ☐ Integer

   (b) `A = 10 + 2.0`
   ☐ Complex ☐ Integer ☐ Float

   (c) `A = 10 / 2`
   ☐ Complex ☐ Integer ☐ Float

(d) `A = 10 * 2.0`
☐ Complex ☐ Integer ☐ Float

2. Predict the **type** of B:

(a) `B = 2 + 2j`
☐ Complex ☐ Integer ☐ String

(b) `B = "Hello " + "World!"`
☐ List ☐ Dictionary ☐ String

(c) `B = 2 + 1 / 2 * 3`
☐ Complex ☐ Integer ☐ Float

(d) `B = 3.0 > 2.0`
☐ Integer ☐ Boolean ☐ Float

3. Predict the **type** of C:

(a) `C = 1 + True`
☐ Float ☐ Integer ☐ Boolean

(b) `C = False + True`
☐ Boolean ☐ Integer ☐ Float

(c) `C = 2 * "1"`
☐ String ☐ Float ☐ Integer

(d) `C = 3.0 * False`
☐ Integer ☐ Boolean ☐ Float

Strings

1. Predict the **value** of C:

```
A = "Hello"
B = "World"
C = A + B
```
☐ `"Hello World"` ☐ `"HelloWorld"` ☐ `"Helloworld"`

2. Predict the **value** of C:

```
A = "Hello "
B = "World"
C = (A + B).find("W")
```

☐ 5 ☐ 6 ☐ 7

3. Predict the **value** of C:

```
A = "Hello"
B = "World"
C = (A + B).find(" ")
```

☐ 5 ☐ 6 ☐ -1

4. Predict the **value** of B:

```
A = "Hello there"
B = A[2]
```

☐ e ☐ l ☐ o

5. Predict the **value** of A:

```
A = "hello there"
A = A.title()
```

☐ "Hello there" ☐ "Hello There" ☐ "hello there"

6. Predict the **value** of A:

```
A = "hello there"
A = A.capitalise()
```

☐ "Hello there" ☐ "Hello There" ☐ "HELLO THERE"

7. Predict the **value** of A:

```
A = "hello there"
A = A.split()[1]
```

☐ "hello" ☐ "there" ☐ "hellothere"

8. Predict the **value** of A:

```
A = "hello world"
A.upper()
```

☐ "Hello World" ☐ "HELLO WORLD" ☐ "hello world"

Lists

1. Predict the **value** of A:

```
A = [3, 4, 5]
A[0] = A[1]
```

☐ [3, 3, 4] ☐ [4, 4, 5] ☐ [3, 3, 5]

2. Predict the **value** of B:

```
B = [10, 20, 30]
B[-2] = B[1]
```

☐ `[10, 20, 30]` ☐ `[10, 10, 20]` ☐ `[20, 20, 30]`

3. Predict the **value** of C:

```
C = ["Hello", "world"]
C = "".join(C)
```

☐ `"Helloworld"` ☐ `["Helloworld"]` ☐ `"Hello world"`

4. Predict the **value** of D:

```
D = ["Python", "is", "fun!"]
D = " ".join(D)
```

☐ `"Python is fun!"` ☐ `["Python is fun!"]` ☐ `"Pythonisfun"`

5. Predict the **value** of E:

```
E = "Python programming"
E = E.split()
```

☐ `["Python", " ", "programming"]` ☐ `["Python", "programming"]` ☐ `["Python programming"]`

6. Predict the **value** of F:

```
F = "Hello there!"
F = F.split("!")
```

☐ `["Hello", " ", "there", "!"]` ☐ `["Hello there", "!"]` ☐ `["Hello there", ""]`

7. Predict the **value** of G:

```
G = [1,2,3]
G[0] = G[1] + 1
```

☐ `[2,2,3]` ☐ `[3,2,3]` ☐ `[1,3,3]`

8. Predict the **value** of H:

```
Values = [[[-1,3],[9,0]],[[0,2],[-3,-1]]]
Values.append(6)
H = len(Values)
```

☐ 3 ☐ 4 ☐ 5

9. Predict the **value** of I:

```
Values = [1,3,-5,7]
Values.sort()
I = Values[1]
```

☐ 1 ☐ 3 ☐ -5

10. Predict the **value** of I:

```
Values = [1,3,-5,7]
Values.sort()
I = Values[1]
```

☐ 1 ☐ 3 ☐ -5

11. Predict the **value** of J:

```
Values = [3 - x for x in range(5)]
J = Values[-1]
```

☐ 1 ☐ 0 ☐ -1

Sets

1. Predict the **value** of C:

```
A = {1,2,3,4}
B = {5}
C = A & B
```

☐ {1,2,3,4,5} ☐ None ☐ set()

2. Predict the **value** of C:

```
A = {1,2,3,4}
B = {4}
C = A | B
```

☐ {1,2,3,4} ☐ {1,2,3,4,4} ☐ {4}

3. Predict the **value** of C:

```
A = {1,2,3,4}
B = {1,4}
C = A - B
```

☐ {2,3} ☐ {1,4} ☐ set()

4. Predict the **value** of C:

```
A = {1,2,3,4}
B = {1,4}
C = B - A
```

☐ {2,3} ☐ {1,4} ☐ set()

5. Predict the **value** of C:

```
A = {1,2,3,4}
B = {4,5,6,7}
C = A ^ B
```

☐ {1,2,3,4,5,6,7} ☐ {4} ☐ {1,2,3,5,6,7}

Loops

1. Predict the **output** of the following program:

```
Total = 0
for Number in range(1,5):
    if Number % 2 == 0:
        Total += Number
print(Total)
```
☐ 4 ☐ 5 ☐ 6

2. Predict the **output** of the following program:

```
Total = 0
for Number in range(1,5):
    if Number % 2 == 1:
        Total += Number
print(Total)
```
☐ 4 ☐ 5 ☐ 6

3. Predict the **output** of the following program:

```
Fact = 3
Mult = 2
for Num in range(Fact):
    Mult = Mult + Num**2


if Mult <= 10:
    print(Mult*Fact)
else:
    print(Mult)
```
☐ 10 ☐ 21 ☐ 26

4. Predict the **output** of the following program:

```
Total = 1
while Total <= 8:
    Total = Total * 2
print(Total)
```
☐ 4 ☐ 8 ☐ 16

5. Predict the **output** of the following program:

```
Total = 1
Count = 1
while Total < 10:
        Total += Count
        Count += 1
print(Total)
```
☐ 10 ☐ 11 ☐ 12