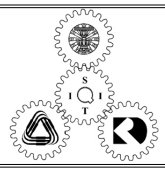

Sirindhorn International Institute of Technology
Thammasat University, Rangsit Campus
School of Information, Computer and Communication Technology

Introduction to Computers and Programming

Midterm Examination

Date: 29 September 2020 TIME 13:15 – 14:45 **Semester:** 1/2020

Instructors:
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Instructions:
Read each question carefully. **Calculators, computers, cell phones are NOT permitted. Turn off all communication devices (mobile phone, etc.) and leave them at the front of the examination room. Books and other materials are NOT allowed in the exam except for an A4 cheat sheet (two sided). Submit your cheat sheet along with your exam when you are done.** You will have 2 hours total for all parts of the exam. Any dishonesty during the exam will result immediate failure (F) grade for the course and suspension for at least one semester. You are not allowed to take anything out of the exam room. You are not allowed to leave the examination room within 2 hours after the start of the examination. In case of an absolute necessity to go to the restroom, only one student may be allowed by the proctor at any given time. The proctor will write "went to toilet" on the student's exam paper. You are not allowed to bring any parts of the exam out of the exam room, otherwise, score reductions and more penalties will be applied.

This exam consists of 3 parts as follows:

Part 1: Multiple choice problems (20 problems = 20 points) and scantron

Part 2: Short answer problems (3 problems = 9 points)

Part 3: Short answer problems (2 problems = 6 points)

For multiple choice problems, mark only one chosen answer for each problem in the provided scantron. Make sure your student ID is bubbled.

For short answer problems, provide only one answer in the blank space provided in this exam for each problem.

Write your name, student ID and your section on every page.

Part 1: Multiple Choice Problems

Choose only one answer for each problem. Use a number 2 pencil to mark your chosen answer in the provided scantron.

1. What is printed out by the following program?

```
version = 3.8
print("Introduction to Python version " + version)
```

   (a) `Introduction to Python`
   (b) `Introduction to Python "3.8"`
   (c) `Introduction to Python version = "3.8"`
   (d) `Introduction to Python version 3.8`
   (e) An error message

2. What is the output of the following program?

```
print("5+7")
```

   (a) `("5+7")` (b) `"5+7"` (c) `5+7` (d) `12` (e) `12.0`

3. What is the output of the following program?

```
print("ITS")
1000/10
```

   (a) `ITS`
   (b) `ITS`
   `100`
   (c) `ITS`
   `100.0`
   (d) `ITS100`
   (e) SyntaxError

4. What is the output of the following program?

```
a=int('2')
print(bool(a))
```

   (a) `'2'` (b) `2` (c) `True` (d) `False` (e) TypeError

5. What is the output of the following program?

```
a = 2.3456
print("%.2f" % a)
```

round numbers

   (a) `2.34` (b) `2.35` (c) `2.350` (d) `2.346` (e) `2.3456`

6. What is the output of the following program when a user inputs `2 3`?

```
x, y = int(input("Input two numbers: ").split())
print("Output = %d" % (x**y))
```

(a) `8`
(b) `8.0`
(c) `Output = 8`
(d) `Output = 8.0`
(e) An error message

int() dont work with split

7. What is the output of the following program?

```
FALSE = 34
FALSE = True % (FALSE // 2)
print(not FALSE)
```

(a) `True`
(b) `False`
(c) `1`
(d) `0`
(e) Syntax Error

true is 1

not anything except 0 is true

8. What is the output of the following program?

```
s ="   fRi Day  ".strip()
print(s.capitalize())
```

(a) `FRIDAY` (b) `fRi Day` (c) `Friday` (d) `Fri day` (e) `FRiday`

9. What is the output of the following program?

```
from math import *
a=3
b=4
c=0
print(sqrt(pow(a,2)+pow(b,2)-2*a*b*cos(radians(c))))
```

(a) `0.0` (b) `1.0` (c) `2.0` (d) `3.6` (e) `5.0`

10. Which of the followings is **NOT** a possible output of the program below?

```
import random as r
print(r.randint(-10, 10))
```

(a) `-10` (b) `0` (c) `0.1` (d) `9` (e) `10`

11. The following program plots a curve $y = x^2 + 2x + 1$ when $x \in [-10, 10]$.
What should be at line 5?

```
1 import numpy as np
2 import matplotlib.pyplot as plt
3
4 x = np.arange(-10, 10, 0.1)
5 ..........................
6
7 plt.plot(x, y)
8 plt.show()
```

(a) `y = x*2 + 2*x + 1`
(b) `y - 1 = x**2 + 2*x`
(c) `y = x**2 + 2*x + 1`
(d) `y = np.pow(x, 2) + 2*x + 1`
(e) `y = math.pow(x, 2) + 2*x + 1`

12. What is the output of the following program?

```
1 x = False
2 y,z = 25,12
3 if x**y != y/z+1:
4     print(not bool(x), end =" ")
5 print("Boolean")
```

(a) `False Boolean`
(b) `True Boolean`
(c) `True`
(d) `False`
(e) Syntax Error

13. What is the output of the following program?

```
1  n=300
2  if n>50 :
3      if n<=200 :
4          print("A", end=" ")
5  elif n>20 :
6      if n%2 == 0 :
7          print("B", end=" ")
8      else :
9          print("C", end=" ")
10 print("Result")
```

(a) `A Result`
(b) `B Result`
(c) `C Result`
(d) `Result`
(e) ValueError

14. This program printed out string `"Hello"` 4 times. What could be the user's input?

```
n = input("n=?")
if n.isnumeric():
    n = int(n)
    if n % 2 == 1:
        print("Hello"*n)
    else:
        print("Hello")
    print("Hello")
else:
    print("Invalid input")
```

(a) 1 (b) 2 (c) 3 (d) 4 (e) 5

15. What is the output of the following program?

```
a, b, c = 5, 7, 2
m = a
if b < m:
    m = b
if c < m:
    m = c
print(m)
```

(a) 2 (b) 5 (c) 7 (d) 9 (e) 12

16. What is the output of the following program?

```
sum = 1
for i in range(1,4):
    for j in range(0,-8,-2):
        sum = sum+i+j
print(sum)
```

i = 1
j = 0 -2 -4 -6
sum = 2 1 -2 -7
i = 2
j = 0 -2 -4 -6
sum = -5 -5 -7 -11
i = 3
j = 0 -2 -4 -6
sum = -8 -7 -8 -11

(a) -5 (b) -6 (c) -8 (d) -10 (e) -11

17. What is the output of the following program?

```
num = 6310
for i in range(4):
    digit = num % 10
    print(digit, end ="")
    num = num // 10
```

(a) 0
(b) 63
(c) 631
(d) 0136
(e) 01360

18. What is the output of the following program?

```
1 for x in range(3,9,3):
2     print(x,end="")
```

(a) `3` (b) `36` (c) `369` (d) `345678` (e) `3456789`

19. What should be `range(__)` in line 3 so that this program prints out the value of $1+3+5+\cdots+(2n+1)$ for a given integer n.

```
1 n = int(input("n="))
2 s = 1
3 for i in range(__):
4     s = s + (2*i+1)
5 print(s)
```

(a) `range(n)`
(b) `range(0,n)`
(c) `range(1,n)`
(d) `range(n+1)`
(e) `range(1,n+1)`

20. What is the output of the following program?

```
1 w = "1011"
2 d, s = 1, 0
3 for b in w:
4     if b == "1":
5         s += d
6     d *= 2
7 print(s)
```

(a) `0` (b) `1` (c) `11` (d) `13` (e) `1011`

Part 2: Short Answer Problems

Provide only one answer in the blank space.

1. Complete the following program so that `print(s)` at line 8 prints out "`n is even`" if the remainder of n divided by 2 equals 0, and "`n is odd`" otherwise.

```
1  n = input("n = ")
2  if n.isnumeric():
3      n = int(n)
4      ..... if n % 2 == 0:
5      ..... s = "n is even"
6      ..... else:
7      ..... s = "n is odd"
8      print(s)
9  else:
10     print("Invalid input")
```

2. What should be in line 3 so that the output of this program is the sum $n^0 + n^1 + n^2 + \cdots + n^n$?

```
1  n = int(input("n="))
2  s = 0
3  ..... for i in range(n+1)
4      s = s + n**i
5  print("sum=",s)
```

3. What is the output of the following program?

```
1  s = "ITS100 during the COVID-19 pandamic"
2  for ch in s:
3      if ch.isupper():
4          print(ch, end="")
5  print()
```

Answer: ..... ITSCOVID .....

Part 3: Short Answer Problems

Provide only one answer in the blank space after **Answer:** below for each problem.

1. How many times will “Hello” be printed out by the following program?

```
x=2
if x<=3:
    if (x!=0):
        print("Hello")
    else:
        print("Hello")
print("Hello")
if x>3:
    if (x!=0):
        print("Hello")
    else:
        print("Hello")
print("Hello")
```

Answer: 3

2. What is the output of the following program?

```
for val in "python":
    if val == "t":
        exit()
    print(val, end="")
```

Answer: py