CSCI 1470 CS 1
Spring 2026
Mid-Term Examination

Last Name: _____ **First Name:** _____ **Student Id:** _____

Number: _____

Time allowed: *1 hour 40 minutes.* Total score: 100 points. *Closed* book examination. *Two letter-size information sheets (both sides) prepared by yourself are allowed.* This question paper is printed on *both sides*.

Answer all questions. Turn in everything: question and answer papers, information sheets and sketches. They will be stapled together.

[Q1] (24%) Multiple Choices. Please circle a choice as your answer. Alternatively, you can write your choice clearly after the question.

[1] What is the value of x after the following code is executed?

```
x = 15
x = x + 1
x = x * 2
x = 30 - x
```

A. -2
B. 2
C. 15
D. 32

[2] Which of the following data values is best represented with a floating-point variable?

A. The number of pets in a house.
B. The number of acorns in a tree.
C. The number of children in a classroom.
D. The speed of a snail.

[3] According to Python's precedence rules, which of the following operators has the highest precedence?

A. binary subtraction -
B. unary subtraction -
C. *
D. +

[4] Which expression gives the number of whole minutes that corresponds to some number of seconds?

A. seconds % 60
B. seconds / 60
C. seconds * 60
D. seconds // 60

[5] What is displayed when the following code is executed?

```
empty_string = ""
print(len(empty_string))
```

A. "empty"
B. 1
C. 0
D. "0"

[6] What is the output?

```
my_list = [2, 8, 3, 1, 18, 5]
print(my_list[3] + my_list[1] * 2)
```

A. 7
B. 10
C. 17
D. 18

[7] What are the contents of names_list after the following code is executed?

```
names_list = ["one", "two", "three"]
digits_list = ["1", "2", "3"]
names_list = names_list + digits_list
```

A. ["1one", "2two", "3three"]
B. ["one", "two", "three", "1", "2", "3"]
C. ["two", "four", "six"]
D. ["1", "2", "3", "one", "two", "three"]

[8] Which statement changes the value associated with key "Lemon" to 0.75 in the dictionary fruits_dict?

A. `fruits_dict[0.75] = "Lemon"`
B. `fruits_dict["Lemon"] = 0.75`
C. `fruits_dict[Lemon] = 0.75`
D. `dict("Lemon") = fruits_dict[0.75]`

[9] Which data type is the correct choice to store the number of wins associated with each basketball team in the NBA?

A. float
B. int
C. tuple
D. dict

[10] What is the value of x after the following code is executed?

```
x = 7
if x < 7:
    x = x + 1
x = x + 2
```

A. 7
B. 8
C. 9
D. 10

[11] Which operator is evaluated last in a Python's expression?

A. or
B. and
C. ==
D. +

[12] Which is true of the badly formatted code?

```
x = input()
if x == "a":
print("first")
print("second")
```

A. Both print() statements must be indented.
B. Neither print() statement must be indented.
C. The first print() statement must be indented.
D. The second print() statement cannot be indented.

[13] What will be the output of executing the following code?

```
my_list = [10, 20, 30, 40, 50]
print(my_list[2])
```

A. 20
B. 30
C. 30 40 50
D. 10 20

[14] Which input for variable c causes "Done" to be output next?

```
c = "y"
while c == "y":
    # Do something
    print("Enter y to continue, n to quit: ", end=" ")
    c = input()
print("Done");
```

A. "y" only
B. "n" only
C. Any value other than "y"
D. No such value (infinite loop)

[15] Fill in the blank so that the output is a count of how many negative values are in temperatures.

```
temperatures = [-2, 8, 4, -7, 18, 3, -1]
count = 0
for t in temperatures:
    if _____:
        count = count + 1
print(f"Total negative temperatures: {count}")
```

A. `t < 0`
B. `temperatures < 0`
C. `temperatures[t] < 0`
D. `t[temperatures] < 0`

[16] What sequence is generated by range(4)?

A. 4
B. 0 1 2 3
C. 1 2 3 4
D. 0 1 2 3 4

[Q2] (15%) True or False (Circle one choice, or write either True or False)

[a] [T F] In Python, the data type dict is an example of a sequence type.

[b] [T F] In Python, the data type string is immutable.

[c] [T F] In Python, the string 'hello' is an object.

[d] [T F] A Python module is stored in a single Python file.

[e] [T F] matplotlib must be installed before its use by a Python program, such as by using pip.

[f] [T F] In Python, turtle is a module in the standard library.

[g] [T F] In Python, the statement `x=3` stores the value 3 in the variable x and then returns the value 3.

[h] [T F] The Python expression `'HELLO'.lower()` returns 'Hello'.

[i] [T F] The expression `False == False` in Python is evaluated to True.

[j] [T F] If the variable `i` is an integer, the expression `i.id()` returns a unique id for i.

[k] Bonus [T F] Tomorrow is March 6th,2025.

[Q3] (14%)

[a] What is the output of executing the following code:

```
x = 1
y = 1
while True:
    x = x + 1
    if x % 3 == 0:
        continue
    y = y + x
    if x % 5 == 0:
        break
print(f"x: {x}")
print(f"y: {y}")
```

[b] Rewrite the following nested if statement by using if-elif-else statement.

```
if score >= 90:
    grade = "A"
else:
    if score >= 80:
        grade = "B"
    else:
        if score >= 70:
            grade = "C"
        else:
            if score >= 60:
                grade = "D"
            else:
                grade = "F"
```

[Q4] (15%) Show the results of executing the following Python expressions. Assume that the following Python statements have already been executed.

```
a = 3
b = 6
c = 2
d = 'world'
e = {'cat': 1, 'dog': 2, 'rabit':3}
```

[a] `b + a // c`

[b] `a < b < c`

[c] `c * c ** c`

[d] `list(d)`

[e] `list(range(b))`

[f] `a < b or b < c`

[g] `a < b or b < c and c > 20`

[h] `d.upper()`

[i] `len(e.keys())`

[j] `e['cat'] < 2 and False`

[Q5] (8%)

[1] Convert the decimal number 204 to hexadecimal and binary numbers.

Hexadecimal:

Binary:

[2] Convert the hexadecimal number 1BD to decimal and binary numbers.

Decimal:

Binary:

[Q6] (24%)

[1] Write Python code that uses a *for* loop to print the numbers in the list `list_1` and their cubes. For example, if list_1 is:

```
list_1 = [3,2,1,4]
```

your code should print out:

```
3**3 => 27
2**3 => 8
1**3 => 1
4**3 => 64
```

[2] Consider the Python list variable `list_2`, which contains an even number of elements. The odd elements are the names of some animals. The even elements are some kinds of counts of the preceding animals. Write Python code to use `list_2` to create a dict variable, `dict_2` in which the keys are the animals and the values are the counts. Your code should initiate, populate and print `dict_2`. For example, for

```
list_2 = ['cat', 10, 'dog', 12, 'rabbit', 14]
```

Executing your code should produce:

```
{'cat': 10, 'dog': 12, 'rabbit': 14}
```

[3] Write Python code that uses a for loop to print the integer elements in a list variable, `num_list`, together with a message whether the integer is a prime number of not. For example, consider that we have:

```
num_list = [2,5,8,13,21,23]
```

Executing your code should produce:

```
2: prime
5: prime
8: not a prime number
13: prime
21: not a prime number
23: prime
```

The package SymPy has a method `isprime(n)` to test whether the argument n is a prime number or not. It returns True if and only if n is prime. You may assume that SymPy has already been installed and can be imported. Your code should include the proper import statement.