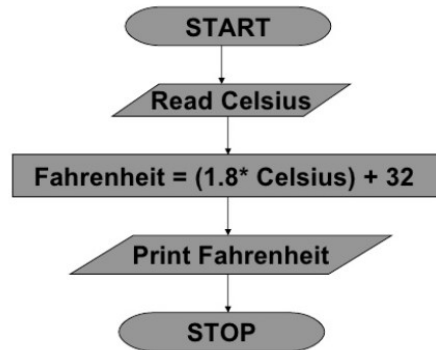


CSE101 – Review Questions

1. Given the following flowchart, write a small piece of Python code (without using function) to convert temperature from Celsius to Fahrenheit. The Python code should be accurate and should compile and run successfully. (6 marks)



2. What is the output of the following print() statements?

(1 mark each, 5 marks)

`print(18 + 3 * 5 ** 3 / 2)`

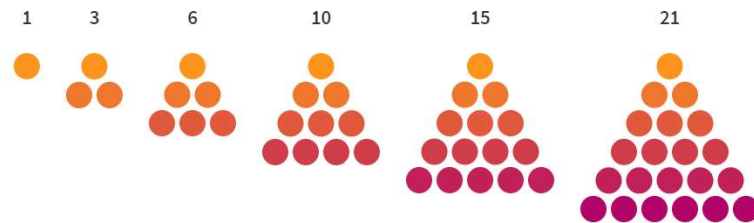
`print('Result: ', 56//2 + 100 ** 0.5/4)`

`print('@*$' * 3 + '%' * 4)`

`print(eval("51 + (54 * (3 + 2))"))`

`print(round(10.51))`

3. The **triangle numbers series** is generated by creating triangles of progressively larger size:



Write a function with the following definition to return a list of n elements in a triangle number series where n is the number of terms in a series. E.g. `triangleSeries(6)` should return a list `[1, 3, 6, 10, 15, 21]`. (10 marks)

def triangleSeries(terms):

4. Create a flowchart for the interactive voice response program that receives user call, asks user for input and transfers calls to appropriate department depending on the user input 1, 2, 3 or 4. The departments to be connected are: input 1 -> Sales (ext. 2203), input 2 -> Service (ext. 2015), input 3 -> Human Resources (2145), input 4 -> General helpdesk (ext. 2217). If the user presses inputs other than 1 – 4, the program asks user for valid input and continues till the user has entered valid input. (6 marks)

5. What is the output of the following?

(3 marks)

```
x = ['ab', 'cd']
for i in x:
    x.append(i.upper())
print(x)
```

Answer: _____

6. What is the output of the following? (3 marks)

```
i = 1
while True:
    if i%2 == 0:
        break
    print(i)
    i += 2
```

Answer: _____

7. What is the output when following statement is executed? (2 marks)

```
>>>"abcd"[2:]
```

Answer: _____

8. What is the output when following code is executed? (2 marks)

```
>>> str1 = 'hello'
>>> str2 = ','
>>> str3 = 'world'
>>> str1[-1:]
```

Answer: _____

9. When executed what would the following script print? (4 marks)

```
def func1():
    print("*")
    func2()
    print("@")
def func2():
    print("***")
    func3()
    print("@@")
def func3():
    print("$ $")
def main():
    func2()
    func1()

main()
```

Answer:

10. Circle appropriate choice. Given a function that does not return any value, What value is thrown by default when executed in shell. (1 mark)

- a) int
- b) bool
- c) void
- d) None

11. L = [1, 23, ?, 1]. L is a list. Consider the following items. Which is valid? (1 mark)

- a) L = [1, 23, 2, 1]
- b) L = [1, 23, 'a', 1]
- c) L = [1, 23, [1, 23, 1], 1]
- d) All of above

12. Which of the following will run without errors (multiple answers possible)? (1 mark)

- a) round(45.8)
- b) round(6352.894,2)
- c) round()
- d) round(7463.123,2,1)

13. Which of the following results in a SyntaxError (Multiple answers possible)? (1 mark)

- a) print("Once upon a time...", she said.)
- b) print('3")
- c) print ("That's okay")
- d) print("He said, "Yes!")

14. What is the output of print list[2:] if list = ['abcd', 786 , 2.23, 'john', 70.2]? (1 mark)

- a) ['abcd', 786 , 2.23, 'john', 70.2]
- b) abcd
- c) [786, 2.23]
- d) [2.23, 'john', 70.2]

15. Which of the following function convert an integer to a character in python? (1 mark)

- a) set(x)
- b) dict(d)
- c) frozenset(s)
- d) chr(x)

16. How do you define algorithm? Given three numbers, write an algorithm to display highest number. (3 marks)

More practice questions:

CSE 101: Introduction to Computers – Midterm Exam 1 Study Exercises

Directions: Below is a set of exercises you should do for practice. Please note that the exam will include questions on material not covered by these practice exercises. Answering this set of questions should be just one part of your preparation for the exam. In addition to solving these problems you should:

- Review the lecture notes and read the relevant chapters of the course textbook.
- Review the homework exercises you have completed up to this point.
- Review the lab exercises you have completed up to this point.
- Do additional practice problems from the textbook – see the problems at the end of each chapter.
- Form a study group and test each other on the material.

THIS IS NOT A PRACTICE MIDTERM EXAM.

1. Give the output of each of the following short Python programs. Note that there are no syntax errors in any of this code.

a. `a = 14 // 3`
`print(str(a))`

a. _____

b. `b = 20`
`b += 7`
`print(str(b))`

b. _____

c. `c = 5`
`c = c**3`
`print(str(c))`

c. _____

d. `d = 9`
`d = 8 + d - 2 * d`
`print(str(d))`

d. _____

e. `e = 6 / 4`
`print(str(e))`

e. _____

```
f. d = 5
   e = 8
   f = 4
   if e - f == f - 1:
       print('X')
   elif d - f > e:
       print('Y')
   else:
       print('Z')
```

f. _____

```
g. p = 2
   q = 7
   r = 6
   if p ** 0 > 1:
       print('A')
   elif q - r == q % r:
       print('B')
   else:
       print('C')
```

g. _____

2. Given a variable `x` that refers to a string, use string slicing to write an expression that is equivalent to the string containing the first 5 characters of `x`.

Sample output:

`x = 'abcdefghijklmnop'`

Your expression should evaluate to `'abcde'`.

`x = 'stonybrook'`

Your expression should evaluate to `'stony'`.

2. _____

3. Do the same thing that was asked of you in the previous problem, except instead of using string slicing, use string concatenation in a loop. Store the result in a variable called `result`.

4. You have been given the initial Python statements:

```
s1 = 'heuristic'  
s2 = 'algorithm'
```

Give the value of the Python expression `s1[2] + s2[5:7]`.

4. _____

5. Suppose you had the following string:

```
s = 'stonybrookuniversity'
```

Using string slicing, write an expression that would extract the word 'brook' from the middle of the string.

5. _____

6. What string is stored in the variable `name` after the following code has been executed?

```
name = 'wolfie the seawolf'  
name.upper()
```

7. Assume that the variable `song` has the value:

```
song = "I like apples, cookies, and oranges."
```

What value would be stored in the variable `result` after the following line of code were executed?

```
result = song.split()
```

8. Give the output for each of the following code fragments. Note that there are no syntax errors in any of this code.

```
a. a = ["ABCDEF", "GHIJK", "MN"]  
   print(str(len(a)))
```

a. _____

```
b. b = ["ABCDEF", "GHIJK", "MN"]  
   print(str(len(b[1])))
```

b. _____

```
c. c = ["ABCDEF", "GHIJK", "MN"]  
   print(c[1][1:4])
```

c. _____

```
d. letters = "ZYXWVUTSR"
   d = letters[len(letters) % 5]
   print(d)
```

d. _____

```
e. name = "ADALOVEELACE"
   e = ""
   for r in name:
       if r != "A":
           e += r
   print(e)
```

e. _____

9. Suppose we have the following line of code:

```
groups = [[8, 6, 7, 4], [2, 9, 11], [3, 15, 5, 14, 29], [17, 19]]
```

Give the output for each of the following code fragments. Write "Error" if the code would cause a program crash.

a. `print(len(groups))`

a. _____

b. `print(len(groups[1]))`

b. _____

c. `print(groups[2])`

c. _____

d. `print(groups[1][2])`

d. _____

e. `print(groups[3][2])`

e. _____

10. What value will be stored in the variable `total` after the following code has been executed?

```
total = 0
for i in range(5):
    total += i
```

10. _____

11. What value will be stored in the variable `total` after the following code has been executed?

```
total = 0
for i in range(4):
    total += i
    total += total
```

11. _____

12. What value will be stored in the variable `result` after the following code has been executed?

```
words = ['car', 'truck', 'boat', 'plane', 'bike']
result = ''
for i in range(len(words)-1):
    result += words[i] + '--'
```

12. _____

13. What value will be stored in the variable `result` after the following code has been executed?

```
nums = [6, 2, 3, 9, 8, 10, 5, 12, 7, 0, 22]
result = []
for n in nums:
    if n % 2 == 0:
        result.append(n)
```

13. _____

14. What value will be stored in the variable `result` after the following code has been executed?

```
words = ['car', 'truck', 'boat', 'plane', 'bike']
result = []
for i in range(len(words)-1):
    result += [words[i]]
result
```

14. _____

15. Write a Python function `retail(wholesale)` that returns the cost of a sofa based on the following scenario. At Lou's Discount Furniture Store, Lou marks the furniture at twice his wholesale cost, plus \$80. He then marks the price down by 15% to determine the retail price. The function takes the wholesale cost as an argument and returns the retail price. Round the retail price to two decimal places before returning it. For example, if `wholesale` were 191.87, the function would return 394.18.
16. Write a Python function `total_seconds(hours, minutes, seconds)` that takes arguments representing a time duration in hours, minutes and seconds, and then returns the equivalent total number of seconds. For example, if the three arguments were 3, 28 and 42, in that order, the function would return 12522 because 3 hours, 28 minutes and 42 seconds are equivalent to 12,522 seconds.

- T 17. Write a Python function `wind_chill(temp_f, velocity_mph)` that calculates and returns the wind chill factor (W), given the air temperature in Fahrenheit ($temp_f$) and wind velocity in miles per hour ($velocity_mph$). The wind chill formula is given as follows, where T is the air temperature in Fahrenheit and V is the wind velocity in miles per hour:

$$W = 35.74 + 0.6215T - 35.75V^{0.16} + 0.4275TV^{0.16}$$

For example, if `temp_f` is 30.0 and `velocity_mph` is 20.0, the function should return approximately 17.361783756466327.

18. Write a Python function `payday(hourly_wage, hours_worked)` that calculates and returns how much a person is paid for the week. The first argument gives the hourly wage, and the second argument gives number of hours worked that week. The employee is paid according to the following scheme:
- for each hour worked up to and including the 40th hour, the employee earns his normal hourly wage
 - for each hour between 41 and 50 hours, the employee earns 1.5 times his hourly wage
 - for each hour worked over 50 hours, the employee earns 2.0 times his hourly wage

The function calculates and returns the total pay for the person. For instance, for 54 hours worked at a wage of \$8.25 per hour, the function would compute the total pay as \$519.75.

19. Write a Python function `multiples_of_3(low, high)` that returns a list containing all of the values from `low` through `high` (inclusive) that are evenly divisible by 3, and only those values. For example, if `low` is 5 and `high` is 21, the function returns the list `[6, 9, 12, 15, 18, 21]`.

20. Write a Python function `shortest(names)` that takes a list of strings containing all the first names of undergraduate students at Stony Brook and returns the shortest name in the list that is at least five characters long. If two or more names have the same shortest length, then the function may return any one of them. Assume that there is at least one name in the list that has at least five characters. Also assume that no name in the list has more than 20 characters in it. Your function should work for a list that could have hundreds or even thousands of names in it.

For example, if the `names` argument were `['Fred', 'Pauline', 'Jennifer', 'Tom']`, the function would return `'Pauline'` because that is the shortest name that has at least five characters in it.

21. Write a Python function `one_copy(nums)` that takes a list of integers as its argument and returns a list containing exactly one instance of each number appearing in the argument. In other words, the duplicated values are eliminated.

For example, if the list `nums` were `[8, 6, 7, 4, 2, 6, 9, 8, 7, 3, 4, 2]`, the returned list would contain only the seven values 8, 6, 7, 4, 2, 9 and 3 (in any order) with no duplicated values.

T

