

## Computer Science 101. Test.

*This is a take home test. Solve this assignment during the week and upload it as a regular homework in Google Classroom. Please verify that your code runs and you like the output the program produces.*

### Question 1.

Ask a user to input an integer number. Make sure that the user indeed inputs an integer.

Next, write a program that prints out True or False value if:

1. If the number is odd, print True
2. If the number is even and in the range from 5 to 9 , print False
3. If the number is even and is greater than 15 , print True
4. If the number is even and less than 0, print False

### Question 2.

You are writing a program for school a foreign country. There 2 people sit behind one desk. Your program should take the number of students in class and return the minimum number of desks needed to fit all students.

Note: students and desks are real objects, and that means that there can not be decimals when counting them. There cannot be 12.5 desks.

### Question 3.

Ask a user to input an integer number. Make sure that the user indeed inputs an integer.

Write a program that would print out the squares of all numbers in range between 0 and user input. For example:

Input: 4

Output:

0

1

4

9

### Question 4.

Ask a user to input an integer number. Make sure that the user indeed inputs an integer.

Write a program that finds the number, the cube of which is the last cube that is less than the input number. Print out that number and its cube.

Input: 1001

Output:

The number is 10, with the cube equal to 1000

### Question 5.

Ask a user to input an integer number. Make sure that the user indeed inputs an integer.

Create a list with and fill it manually with random numbers. Next, loop over the elements of that list and append all the elements that are greater than the input number.

Print out new filtered list.

### Question 6.

Create a dictionary with names as keys and scores as values (there should be at least 5 entries). Next, write a program that finds second best result and prints out the name of the participant with that score and the score itself.

### Question 7.

Take this data and make it into the dictionary:

Mary : [20,30,60]

John : [10,50,20]

Lucy : [70,10,10]

Jack : [10,110,0]

Alice : [50, 20, 70]

Write the program that takes a name query from the user and counts the average and the sum of the scores corresponding to the user input. For example:

Input: Jack

Output: "For Jack average score is 40 and the sum is 120"

### Question 8.

To cook one bowl of cereal you need 100 grams of cereal and 150 ml of milk.

Ask a user to input amount of milk and cereal she/he has. Make sure that the user indeed inputs integer values.

Next, write a program that determines the number of portions one can make with this quantity of ingredients. Print out the result.

### Question 9.

Create a list with a sentence broken up in separate words, like the following:

```
["I", "felt", "happy", "because", "I", "saw", "the", "others", "were", "happy", "and",  
"because", "I", "knew", "I", "should", "feel", "happy", "but", "I", "wasn't", "really",  
"happy"]
```

Write a program that loops over the list, and counts the number of occurrences of each word in that list. Store the result in a dictionary, where the key is the word and the count is the value.

### Question 10.

Ask a user to input a text string and store it in some variable. Next, allow user to enter new text strings and verify if they are a substring of the first string.

For example:

Input: chair

Substring: air

Output: True

Input: chair

Substring: car

Output: False

### Question 11.

Create a 4x4 nested list of lists filled manually with random coordinates stored in a tuple, like following:

```
[[ (1, 4), (5, 2), (9, 1), (4, 6) ],  
 [ (4, 3), (6, 2), (1, 7), (2, 5) ],  
 [ (0, 1), (2, 4), (9, 4), (2, 7) ],  
 [ (8, 2), (1, 5), (7, 6), (3, 3) ]]
```

Write a program that flips that nested list and prints it in reverse order, like this

```
[[ (3, 3), (7, 6), (1, 5), (8, 2) ],  
 [ (2, 7), (9, 4), (2, 4), (0, 1) ],  
 [ (2, 5), (1, 7), (6, 2), (4, 3) ],  
 [ (4, 6), (9, 1), (5, 2), (1, 4) ]]
```

### Question 12.

Write a program that converts any roman numeral in range from 0 – 100, to our Arabic numerals. Allow user to input the roman numeral as a string and print out the converted result.

For example:

Input:

“XCVI”

Output:

96

You can read more about roman numerals here:

[https://en.wikipedia.org/wiki/Roman\\_numerals](https://en.wikipedia.org/wiki/Roman_numerals)