New York University

CSC-101 Intro To Programming Language

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1. Write a program that asks the user to input an integer. The prompt should be exactly: "Please enter an integer: ". If the input is an even number, your program should display a message on the console saying, "⟨the number the user gave⟩ is an even number." Otherwise, the output should display, "⟨the number the user gave⟩ is an odd number."

2. (a) Write a function listOfEven(n:int)→list[int], that accepts a non-negative integer, n. It should then return a list of all the integers in the interval [0,n].

   (b) Call the function listOfEven(100). Then **use** the result to find the sum of all the even numbers in the interval [0,100]. You are **not** allowed to find this sum using the formula for the summation of arithmetic sum.

3. (a) Write a function listOfNumbers(n:int)→list[int]. Given a a positive integer n, it returns a list of integers in the interval [1,n].

   (b) Write a function fizzBuzz(numbers:list[int])→None. Given a list of integers, the function outputs each number on a separate line on the console unless the following holds:

      i. If a number is a multiple of 3, then the output should be "Fizz".

      ii. If a number is a multiple of 5, then the output should be "Buzz".

      iii. If a number is a multiple of both 3 and 5, then the output should be "Fizzbuzz".

   (c) Use listOfNumbers(n) and fizzBuzz(numbers) together to see output of fizzBuzz(numbers) where numbers is a list of integers [1,100].

4. There is a function beep().

   ```
   def beep():
       print("beep")
   ```

   There is also a function called boop()

   ```
   def boop(sentence:str)→str:
       return sentence+" boop"
   ```

   Given the definitions above, predict the output:

   1. print(beep())
   2. print(boop("What does this function do?"))

5. (a) Define a function capitalsIKnow(country:str)→str. The function as an input takes the name of a country. The function must have a local list of countries and their capitals as follows:

   capitals=[[“Bangladesh”,“Dhaka”],[“India”,“Delhi”],[“USA”,“Washington DC”],

   [“Italy”,“Rome”] [“Afghanistan”,“Kabul”] ,

   [“Iran”, “Tehran”], [“Zimbabwe”,“Harare”], [“Brazil”,“Brasillia”]]

   If the name of the country is in the local list, the function must return a string that says: “I know the capital of ⟨name of country⟩. It is ⟨capital of the country⟩!”. Otherwise, the function returns, “ Sorry. I do not know what is the capital of ⟨name of country⟩”. For simplicity assume the inputs all will be valid and the name of the country will be in the same format as the name of country in the list. For example, the given input will “USA” neither “United States of America” nor “America”.

   (b) Define a function capitalsIknow2(country:str)→str. Like the function capitalsIknow(country) it has a list of capitals and countries in the form of a 2D list. Assume this 2D list is the same 2D list as part a). You need to use this 2D list to generate a dictionary, where keys are the countries, and values are the respective capitals. Now use this dictionary to generate the same return value as part a).

6. (a) Write a program that prompts the users to input their personal identity. These questions are related to immigration and travelling. These questions are:

   “What is your first name? Spell your first name exactly as it appears on your passport:”

   “What is your last name? Spell your first name exactly as it appears on your passport: ”

   “State your gender. You are **allowed** to state **other**, **gender non-conforming**, **non-binary**, or **any term** with which you identify yourself: ”

   “Date of Birth. Use dd/mm/yyyy format: ”

   “Nationality. If you are citizen of more than one country, simply state the nationality of the country whose passport you will be using: ”

   “Passport Number: ”

   “Passport Issue Date. Use dd/mm/yyyy format: ”

   “Passport Expiry Date. Use dd/mm/yyyy format: ”

   “Marital Status: ”

   “Name of Spouse. Write NA if not applicable”

   “Name of children if any. Otherwise, type NA.”

   “State the type of visa. You can only write **entry**, **tourist**, **immigration**, **student**, **diplomatic**, and **work**.”

   If the user inputs invalid visa type,the question will be asked again after displaying an error message. These input

   Once, the user has entered all the information. The program must display a thank you message. “ Thank you ⟨first name+ last name⟩ for filling out the form!”.

(b) After the thank you message, the program must output:

"This is your submission:

FIRST NAME: ⟨first name⟩

LAST NAME: ⟨last name⟩

GENDER: ⟨gender⟩

PASSPORT NUMBER: ⟨passport number⟩

PASSPORT ISSUE DATE: ⟨passport issue date⟩

PASSPORT EXPIRY DATE: ⟨passport expiery date⟩

MARITAL STATUS: ⟨marital status⟩

NAME OF SPOUSE: ⟨name of spouse⟩

NAME OF CHILDREN: ⟨name of children⟩

NAME OF VISA TYPE: ⟨visa type⟩

While, you can do part b) by repeatedly calling the print() function manually, if you use the right data structure in part a), you can use a simple loop and save yourself some time!