**Lab 5 - Functions and Lists**

## Functions

**1.** Write a function that takes a number as a parameter and prints the numbers from 1 to that number on the screen.

**def numPrint(num):**

**i = 1**

**while i <= num:**

**print(i)**

**i += 1**

**number = int(input("Please enter a number: "))**

**numPrint(number)**

**2.** Write a function that takes a number as a parameter and iterates from 0 to that number. For each iteration, it will check if the current number is even or odd, and report that to the screen (e.g. “1 is odd”, “2 is even”).

**def evenOdd(num):**

**for i in range(num + 1):**

**if i % 2 == 0:**

**print(i, "is even")**

**else:**

**print(i, "is odd")**

**number = int(input("Please enter a number: "))**

**evenOdd(number)**

**3.** Write a function that takes a number as a parameter, iterates from 0 to that number, and for each iteration of the loop, multiplies the current number by 9 and prints the result (e.g. “2 \* 9 = 18”).

**def multiplyNum(num):**

**for i in range(num + 1):**

**sum = i \* 9**

**print(i, "\* 9 =", sum)**

**number = int(input("Please enter a number: "))**

**multiplyNum(number)**

**4.** Write a function that asks the user for a number and prints the sum of all numbers from 1 to the number they enter.

**def addNum():**

**number = int(input("Please enter a number: "))**

**sum = 0**

**for i in range(number + 1):**

**sum = sum + i**

**print(sum)**

**addNum()**

**5.** Write a function to print a factorial of a number.

**def factorial(number):**

**result = 1**

**for i in range(1, number + 1):**

**result \*= i**

**print(result)**

**number = int(input("Please enter a number: "))**

**factorial(number)**

**6.** Write a function that takes a string as a parameter and returns a string that is made up of the first two characters and the last two characters. If the string has a length less than 4 the program prints a message on the screen. For example: “hello there” will result in “here”

**def stringFirstLast(sentence):**

**if len(sentence) < 4:**

**input("Please enter a word/sentence that is atleast 4 letters long: ")**

**else:**

**sentence = sentence[0:2] + sentence[(len(sentence)-2):(len(sentence))]**

**print(sentence)**

**sentence = input("Please enter a word/sentence that is atleast 4 letters long: ")**

**stringFirstLast(sentence)**

**7.** Write a Python program to remove the characters which have odd index

values of a given string. The function should return the new string.

**def stringRemoveOdd(sentence):**

**new\_string = ""**

**for i in range(len(sentence)):**

**if i % 2 == 0:**

**new\_string += sentence[i]**

**return new\_string**

**sentence = input("Please enter a string: ")**

**result = stringRemoveOdd(sentence)**

**print("String after removing odd index characters: ", result)**

**8.** Write a Python function to get the first half of a specified string of even length.

Sample function and result:

string\_first\_half(“Python”)

should return Pyt

**def stringHalf(sentence):**

**new\_string = ""**

**if len(sentence) % 2 == 0:**

**for i in range(0,(len(sentence)//2)):**

**new\_string += sentence[i]**

**return new\_string**

**sentence = input("Please enter a string: ")**

**print(stringHalf(sentence))**

**9.** Write a Python function to insert a string in the middle of a string.

Sample function and result:

insert\_string\_middle(“{{}}”,”PHP”)

Should return {{PHP}}

**def stringInsertMiddle(sentence, substring):**

**new\_string = ""**

**new\_string = sentence[:len(sentence)//2] + substring[:] + sentence[(len(sentence)//2):]**

**return new\_string**

**sentence = input("Please enter a string: ")**

**substring = input("Enter a string you want to insert in the middle: ")**

**print(stringInsertMiddle(sentence, substring))**

**10.** Write a Python function that takes a string and two indices, and returns

a string with the part between the indices removed.

For example: remove\_substring(“Hello there”, 2, 6) should return “Hehere”

**def removeSubstring(sentence, index1, index2):**

**new\_string = ""**

**new\_string = sentence[:index1] + sentence[index2 + 1:]**

**return new\_string**

**sentence = input("Please enter a string: ")**

**index1 = int(input("Enter the index you want to remove from: "))**

**index2 = int(input("Enter the index you want to remove up to: "))**

**print(removeSubstring(sentence, index1, index2))**

## Lists

**11.** Write a Python function to sum all numbers in a list.

Sample list: [1, 2, 3, 4, 5, 6]

Expected Output: 21

**def sumList(my\_list):**

**sum = 0**

**for number in my\_list:**

**sum += number**

**print(sum)**

**my\_list = [1, 2, 3, 4, 5, 6]**

**sumList(my\_list)**

**12.** Write a Python function to get the largest number from a list.

Sample list: [1, 2, 3, 4, 5, 6]

Expected Output: 6

**def largestList(my\_list):**

**largest = my\_list[0]**

**for number in my\_list:**

**if number > largest:**

**largest = number**

**return largest**

**my\_list = [1, 2, 3, 4, 5, 6]**

**result = largestList(my\_list)**

**print("The largest number in the list is:", result)**

**13.** Write a Python function that takes a list of words and counts how many

of them begin with ‘o’.

Sample list: ['Always', 'look', 'on', 'the', 'bright', 'side', 'of', 'life']

Expected Output: 2

**def beginWithO(my\_list):**

**count = 0**

**for word in my\_list:**

**if word[0].lower() == "o":**

**count += 1**

**return count**

**my\_list = ['Always', 'look', 'on', 'the', 'bright', 'side', 'of', 'life']**

**result = beginWithO(my\_list)**

**print("Number of words starting with 'o':", result)**

**14.** (modify Ex13)Write a Python function that takes a list of words and a character, and counts how many of the words in the list begin with that character.

**def beginWithO(my\_list, char):**

**count = 0**

**for word in my\_list:**

**if word[0].lower() == char.lower():**

**count += 1**

**return count**

**my\_list = ['Always', 'look', 'on', 'the', 'bright', 'side', 'of', 'life']**

**char = "o"**

**result = beginWithO(my\_list, char)**

**print("Number of words starting with 'o':", result)**

**15.** Write a Python function that takes a list of numbers and returns a new list containing only the even numbers from the first list.

Sample list: [1, 2, 3, 4, 5, 6]

Expected Output: [2, 4, 6]

**def evenList(my\_list):**

**result\_list = []**

**for num in my\_list:**

**if num % 2 == 0:**

**result\_list.append(num)**

**return result\_list**

**my\_list = [1, 2, 3, 4, 5, 6]**

**result\_list = evenList(my\_list)**

**print("Even numbers: ", result\_list)**

**16.** Create a list of 100 integers whose value and index are the same, e.g., L[5]=5.

**my\_list = []**

**for i in range(100):**

**my\_list.append(i)**

**print(my\_list)**

**17.** Given a = [1,2,3] and b = [1,2,3] , what is the result of:

(a) a == b -> True

(b) a is b -> False

**18.** Write a Python program to remove duplicates from a list.

Sample list: [1, 1, 2, 2, 3, 3, 4, 4, 5, 5, 6, 6]

Expected Output: [1, 2, 3, 4, 5, 6]

**def removeDuplicate(my\_list):**

**result\_list = []**

**for num in my\_list:**

**if num not in result\_list:**

**result\_list.append(num)**

**return result\_list**

**my\_list = [1, 1, 2, 2, 3, 3, 4, 4, 5, 5, 6, 6]**

**new\_list = removeDuplicate(my\_list)**

**print("List without duplicates: ", new\_list)**

**19.** Write a Python function that takes two lists and returns True if they have at least one common member.

Sample list: [1, 2, 3, 4, 5, 6] and [10, 9, 8, 7, 6]

Expected Output: True

**def commonMember(list\_1, list\_2):**

**for num in list\_1:**

**if num in list\_2:**

**return True**

**return False**

**list\_1 = [1, 2, 3, 4, 5, 6]**

**list\_2 = [10, 9, 8, 7, 6]**

**result = commonMember(list\_1, list\_2)**

**print(result)**

**20.** Write a Python program to get the difference between the two lists.

Sample list: [1, 2, 3, 4, 5, 6] minus [10, 9, 8, 7, 6]

Expected Output: [1, 2, 3, 4, 5]

Sample list: [10, 9, 8, 7, 6] minus [1, 2, 3, 4, 5, 6]

Expected Output: [10, 9, 8, 7]

**def difference(list\_1, list\_2):**

**result = []**

**for num in list\_1:**

**if num not in list\_2:**

**result.append(num)**

**return result**

**list\_1 = [1, 2, 3, 4, 5, 6]**

**list\_2 = [10, 9, 8, 7, 6]**

**result = difference(list\_1, list\_2)**

**print(result)**

**21.** Write a Python program to convert a list of multiple integers into a single integer.

Sample list: [11, 33, 50]

Expected Output: 113350

**def singleInt(my\_list):**

**result = ""**

**for num in my\_list:**

**result = result + str(num)**

**return int(result)**

**my\_list = [11, 33, 50]**

**result = singleInt(my\_list)**

**print(result)**