NANYANG TECHNOLOGICAL UNIVERSITY
School of Electrical & Electronic Engineering

IE2108 Data Structures and Algorithms in Python

Tutorial No. 01 (Sem 1, AY2023-2024)

Before attempting these problems, please install Jupyter Notebook (see installation instructions at the end of Week 1 Lecture Notes). In Jupyter Notebook, write and run python programs to do the following:

Create the following variables:

p = "Hello Singapore!"

pp = "I'm learning Python."

q = 10

r = 10.2

Display the variables, just make sure the variables are as what I expect.

Display the data type (or class) of each variable.

Display p + pp .

Display q + r .

Display range(10) .

Display list(range(10)) .

Modify the above statement to display [1, 3, 5, 7, 9].

Modify the above statement to display [20, 18, 16, 14, 12].

Create a list b with the following elements: 'data', 'and', 'book', 'structure', 'hello', 'st'.

Display it to make sure that your command worked.

Append a number 32 to the end of the list and verify your command works.

What is the meaning of b[2:3]?

Remove the 3rd element of the list.

Use a different command to remove the 1st element of the list.

Display the number of elements in the list (the length of the list).

For the following 2 values, check whether both are greater than 0

a = 32

b = 132

For the following 2 values, check whether at least one is greater than 0.

a = 32

b = -32

What data type is person defined below?

person = {}

Display person after the following.

person['firstname'] = 'Jacky'

person['lastname'] = 'Chan'

person['age'] = 69

person['address'] = ['Hong Kong']

Display his first name.

Write a basic calculator that performs addition, subtraction, multiplication, and division.

Write a simple game where the user tries to guess a randomly generated number.

The program first selects a random number without telling you the number.

You make a guess. The program will tell you if too high or too low, until

you guess it right.

Hint: Use the following:

import random (for importing a library on random numbers)

random.randint(1, 100) (for generating a random integer between 1 and 100, including both 1 and 100 themselves.)

Generate and print the first n numbers in the Fibonacci sequence

which is 0, 1, ..., with each subsequent number equal to the sum of

the previous 2 numbers.

Check if a given string is a palindrome (reads the same forwards and backwards).
