

MATH5061: Week 2 Assignment

Instructions

Please submit answers to this assignment as a .tar.gz file of the directory containing the three python solution source files via email to math5061@temple.edu. Make sure to use the subject line (without quotes) `"MATH5061:Assignment 02:ACCESSID"`
Where ACCESSID is your AccessNet ID, for example tue86537

Section 1

Q.1

Write a python program to do the following

- Accept a dollar amount from the user. For example 123.33
- Assume we have the following bills and coins
 - \$20, \$10, \$5, \$1, \$0.25, \$0.10, \$0.05, \$0.01
- Calculate how many units of each denomination is required for the given dollar amount
- Print the result
- Hint:
 - Do you get the correct answer when calculating with float types for the input 123.33?
 - Can you write the program so that it does all its calculations using only integers (user input stays the same)

Q.2

A rectangle is completely defined by the coordinates of the top left and bottom right corners. Write a Python program that accepts input from the user to define two rectangles. The following inputs are sufficient

- Coordinates of top left corner of rectangle1 in the format x,y
- Coordinates of bottom right corner of rectangle1 in the format x,y
- Coordinates of top left corner of rectangle2 in the format x,y
- Coordinates of bottom right corner of rectangle2 in the format x,y

The program should then determine if the two rectangles overlap and print the result

Hint: Use `str.split()` to split input of the form "x,y" into a tuple of two strings. Then convert them to float before performing any comparisons

Q.3.

Implement ascending bubble sort on a list of numbers

Bubble sort is an algorithm that sorts a list of items by successively comparing pairs of adjacent elements and swapping them if they are in an incorrect order. The entire operation (called a pass) is repeated **N** number of times where **N** is the length of the list

print() the result of sorting this list as your output **[9, -8, -44, -48, 13, 33, 22, 22, -22, 50, 41, 4]**

HInt: This program can be written with nested loops

