Big Data (ECE 595-004/007), Fall 2018
Hands-on 1, Part1: Python Programming
Due date: September 07, 2018, 11:59 PM

Purpose

The part 1 of Hands-on 1 will give you an opportunity to write Python programs to exercise the language constructs. The programming experience will be helpful for completing other hands-on assignments in the course.

- **Skills:** To implement the programs, you need to know file reading, input/output, string, control structure, list, dictionary, and functions in Python (pretty much everything covered in the lecture!).
- **Knowledge:** After completing this assignment, you will be familiar with Python programming.

Tasks

Task 1 (10 pts): Assume in an ATM, there are bills for $100, $50, $20, $10, and $5. Write a python program atm.py for an ATM machine in which the customer will enter the amount to be withdrawn and the ATM will dispense the cash with a minimum number of bills if it can dispense the amount with available bills. Following are a few test cases for your program:

```
Enter the amount for withdrawal: 145
Please collect your bills as follows:
$100: 1
 $20: 2
  $5: 1

Enter the amount for withdrawal: 73
The amount cannot be withdrawn.
```

Criteria for success:

- Program runs without any errors or exception: **2 pts**
- Program takes the user input for the amount: **2 pts**
- Program displays the output
  - with some logic errors: **3 pts**
  - correct: **4 pts**
  - correct with those bills which are used: **6 pts**

Task 2 (20 pts): Write a **`registrar.py`** program that will load the **records.txt** (available in blackboard) file that has the scores for students in different subjects. Your program will be user interactive and it will ask the user to input the choice. Based on the choice, it will perform following tasks:

- Display the grades in different subjects for each student. You may consider this grading scale: A >= 90, 89 >= B >= 80, 79 >= C >= 70, 69 >= D >= 60 and 59 >= F.
- Display the highest score and scorer in each subject

- Display the GPA of each student. The credit hours for each course is 3 and points for A, B, C, D, and F are 4, 3, 2, 1, and 0, respectively.

Criteria for success:

- Program runs without any errors or exceptions: **4 pts**
- Program calculates the grades in different subjects for each subject
  - correctly**: 3 pts**
  - with some logic errors: **1 pts**
- Program calculates the top score and scorer in each subject
  - correctly: **4 pts**
  - with some logic errors: **2 pts**
- Program calculates GPA for each subject
  - correctly: **4 pts**
  - with some logic errors: **2 pts**
- Tasks implemented using functions: **3 pts**
- Proper code and output format: **2**

Extra credits (**2 pts**): If you find and submit program code for the similar assignments on the Internet along with your **unique** solutions.

Note: If you take any help from your classmates, mention their names in the submission box and specify the type of help.