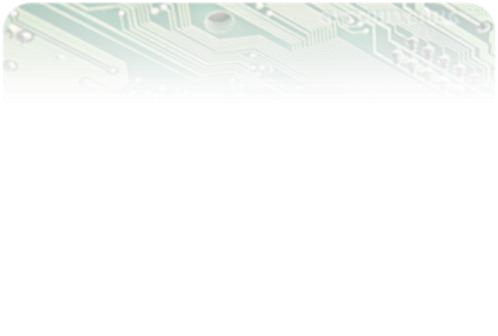
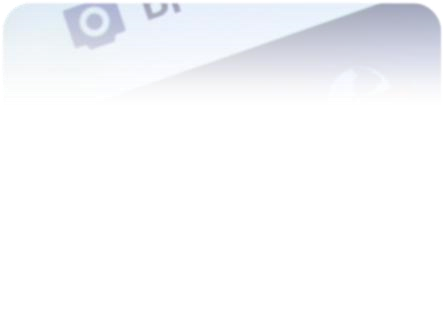
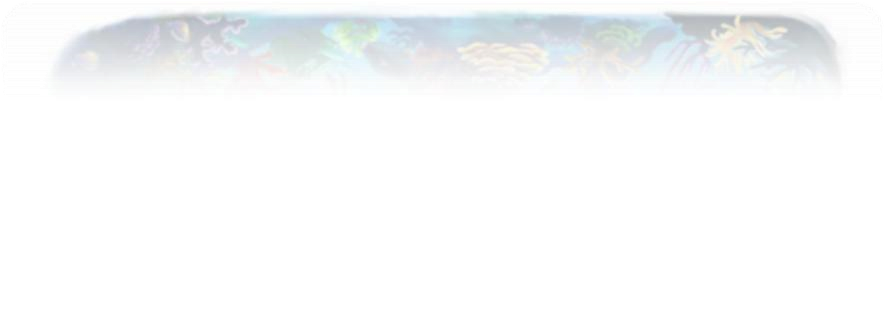
**Introduction to Programming (CS200)**

**Shafay Shamail**



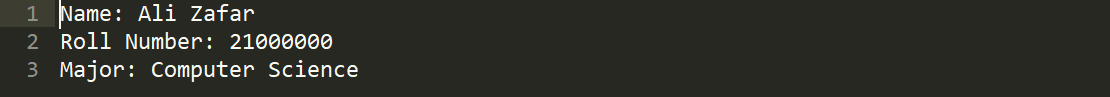
# Lab Guidelines

1. Make sure you get your work graded before the lab time ends.
2. You put all your work onto the LMS folder designated for the lab (i.e. “Lab01”) before the time the lab ends.
3. Talking to each other is NOT permitted. If you have a question, ask the lab assistants.
4. The object is not simply to get the job done, but to get it done in the way that is asked for in the lab.
5. Any cheating case will be reported to Disciplinary Committee without any delay.

Let’s Begin……

Task 1: (25) 5+3+3+3+3+3+5

1. Write a class **STUDENT** that has three data members Name, Roll Number and Major.
2. Write a constructor that takes three parameters to set Name, Roll Number and Major of the student.
3. Write a function setName(string name) that sets the Name of the student.
4. Write a function setRollnum(int rollNumber) that sets the Roll Number of the student.
5. Write a function setMajor(string major) that sets the Major of the student.
6. Write a function print() to print the student details as follow:



1. Add a main() function to test the program.

# STOP AND SHOW YOUR WORK TO THE TA

Task 2: (25) 5+3+3+3+3+3+5

Implement a Class **Rectangle** that has two data members Length and Width.

Write program

1. that takes two integers as input for length and width.
2. that returns the perimeter of the rectangle.
3. that returns area of the rectangle.
4. that checks whether the Rectangle is also a Square or not and prints the following message “Yes! It is a Square” or “No! It is not a square.”
5. that prints a rectangle on the terminal using ‘\*’; for example, a rectangle having length 10 and width 4 will look like:

\*\*\*\*\*\*\*\*\*\*

\* \*

\* \*

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Write the main() function to test the class. Hint: Make different objects of the class Rectangle and print the details accordingly.

# STOP AND SHOW YOUR WORK TO THE TA

Task 3: (25)

Write a class **Complex** that has data members real, and imaginary. 4

Write following member functions:

1. Constructors 2
2. Setters 2
3. Getters 2
4. A method that adds two complex numbers 2
5. A method that subtracts two complex numbers 2
6. A print function that prints a complex number in its appropriate form

i.e. real+*i*imaginary 2

1. Overloaded + operator 2
2. Overloaded – operator 2

Write a main() function to test the class. 5

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# STOP AND SHOW YOUR WORK TO THE TA

Task 4: (25)

1. Add a loop in the main() functions of each of the above tasks 1 to 3 so that the program prompts the user to input ‘q’ in order to quit the program otherwise continue. 4
2. For Task 1, create an array of ten students. Write a method that sorts this array into ascending order. 7
3. For Task 2, create an array of given number of triangles. 7

The number of objects to be stored in an array is to be given by the user.

Using a loop, call the relevant print method to print all the triangles.

1. For Task3, create an array of five complex numbers. 7

Write a method that uses a loop to add all these complex numbers and prints their sum using the print function.

Zip your tasks into one folder with format:

example "**1900000-Lab1**" and upload on LMS before the tab is

closed. You will not be given extra time