

# Object Oriented Programming(Pr)

Spring 2020

Problem Set 5

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## Assessment Criteria:

Program Working	6 points
Code Style	2 points
Code Commenting	2 points

## Assignment

Write a C++ program in which you are required to define a class named **Student**. The class must include the following data members.

- **Student Name** //data type should be String (name should be alphabetic, special characters and numbers are not allowed)
- **Registration Number** //data type should be String (Format should be like this: 2015-CS-888, any other format should be handled in setter function )
- **Date of Birth** //data type should be Date (Date of birth should be less than 1<sup>st</sup> January 2005 and greater than 31<sup>st</sup> December 1990, add conditions for invalid data)
- **CGPA** // data type should be double ( should be between 0 and 4)
- **CNIC** //data type should be String (only 13 digits are allowed with valid CNIC)
- **Hobbies** // data type should be string array

1. Your Program should define two constructors for the class **Student**
  - a constructor with **no parameter**
  - a constructor with **two parameters** (Name, Registration Number)All of these two constructors are meant to initialize their respective objects.
2. Define getter setter for each data member
3. Apart from getter, setter and constructor, define the following function
  - i. **Input()** – It should take input of all attributes from user
  - ii. **GetAge()** – it should calculate age of student upto current date.
  - iii. **GetStatus()** – function should tell the status of student in the following cases
    - a. IF CGPA less than 2.0 - Status is Suspended
    - b. IF CGPA between 2.0 and 2.5 - Status is Below Average
    - c. IF CGPA between 2.5 and 3.3 - Status is Average
    - d. IF CGPA between 3.3 and 3.5 - Status is Below Good
    - e. IF CGPA greater than 3.5 – Status is Excellent
  - iv. **NumberOfWordsInName()** – it should return number of words in students name

- v. **GetGender()** – if last digit of CNIC is odd then it should return MALE otherwise FEMALE
  - vi. **ToString()**— It should display the output of student object in format given in output section
4. Declare two objects (1 for each type of constructor) in **main**.
  6. Write a function in class **Student** to display the initialized data members for each object.
  7. Write **destructor** for the class **Student**. Display a message that says “**destructor called**” in the destructor body.

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### Output

Your output should be like the following with same formatting for the initialized two objects.

Name: Sarfraz Ahmed (Contain 2 words)

Registration Number: 2017-CS-999

CGPA: 2.9 Average

Date of Birth: December 27, 1999 (Age is 20 years 6 months and 12 days)

CNIC: 3567912356781

Gender: Male

Hobbies: Cricket, Study

Name: Hafiz Muhammad Aslam (Contain 3 words)

Registration Number: 2017-CS-999

CGPA: 3.4 Good

Date of Birth: November 27, 1999 (Age is 20 years 7 months and 12 days)

CNIC: 3567912356785

Gender: Male

Hobbies: Politics, Hockey, Study

### Bonus Tasks:

After the above output, create an interface, to add, edit and delete student. And then give option to user to get the students with particular hobby.

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### What to submit

You are simply required to submit a source file ( **Student.cpp** and **Test.cpp**(in which main function is defined) ) that includes the implementation of the above mentioned program. No extra file should be submitted.