

CSE 108 January 2022

Offline 1

Consider the following main function definition of a CPP program. This function uses the objects of two classes named *Student* and *Batch*. You have to write the full CPP program without changing the definition of the main function. You can get hint about the member variables and the member functions of the classes from the code inside the main function and from the expected output. Carefully read the comments inside the main function and get idea about what to do and what not to do. In your program, you can use only two string functions: *strlen* and *strcpy*.

Main function definition:

```
int main()
{
    // Part 1
    /*A student class holds the information of the
    student name, id, credit earned so far, and
    cumulative gpa (cgpa)*/
    /*The name of a student is stored using malloc,
    which will be freed during destruction*/
    Student s1("Tamim Iqbal", 1905131, 39, 3.56);
    Student s2("Liton Das", 1905150, 39, 3.52);
    s1.showInfo();
    cout<<"Changing the name of s1"<<endl;
    /*During changing the name, you should reallocate
    memory of the new name and free the previously
    allocated memory*/
    s1.change("Tamim Iqbal Khan");
    s1.showInfo();
    cout<<"Changing the id of s2"<<endl;
    s2.change(1905149);
    s2.showInfo();
    cout<<"Adding a term result of s1"<<endl;
    /*The first argument of addTermResult is the credit
    earned in a term and second one is the gpa obtained
    in that term*/
    s1.addTermResult(19, 3.85);
    s1.showInfo();

    // Part 2
    /*Batch contains a list of students*/
```

```

/*During construction, a Batch object allocates dynamic
memory for 1200 students using malloc. The memory will
be freed during destruction*/
Batch b;
b.addStudent(s1);
b.addStudent(s2);
cout<<"Printing the list of students of the batch b"<<endl;
b.showAllStudents();
}

```

Expected output:

```

Name: Tamim Iqbal, Id: 1905131, Credit Completed: 39, Cgpa:3.56
Changing the name of s1
Name: Tamim Iqbal Khan, Id: 1905131, Credit Completed: 39, Cgpa:3.56
Changing the id of s2
Name: Liton Das, Id: 1905149, Credit Completed: 39, Cgpa:3.52
Adding a term result of s1
Name: Tamim Iqbal Khan, Id: 1905131, Credit Completed: 58, Cgpa:3.655
Printing the list of students of the batch b
Name: Tamim Iqbal Khan, Id: 1905131, Credit Completed: 58, Cgpa:3.655
Name: Liton Das, Id: 1905149, Credit Completed: 39, Cgpa:3.52

```

Stepwise Approach:

If you find it difficult to write two classes at once, you can do it stepwise. In the first step, comment out the code fragment of part 2 inside the main function. Then write only the class definition of *Student* class. If you can write the correct definition of *Student* class, then you will get 7 out of 10. After the completion of the *Student* class definition, uncomment part 2 inside the main function and write the definition of *Batch* class. DO NOT add, remove or make any other changes to the main function in the final CPP file that you will submit.

Submission:

Upload the CPP file in the Moodle by **June 20, 2022 (Monday) 11.55 PM**. The name of the CPP file must be your student no.