

Q: implement Program P1 using Default Constructor and Parameterized constructor.

Ans:

Source Code:

```
#include <bits/stdc++.h>

using namespace std;

class Student {

    public:

        string name;

        int _class, rollNum, totalSubjects;

        string subjectNames[100], subjectCodes[100];

        int marks[100], maxMarks[100];

// Default Constructor

    Student() {

        this->name="";

        this->_class=0;

        this->rollNum=0;

    }

// Parameterized Constructor

    Student(string name, int _class, int rollNum) {

        this->name=name;

        this->_class=_class;

        this->rollNum=rollNum;

    }

// Student data setter, in case of default constructor
```

```

void setStudentData(string name, int _class, int rollNum) {

    this->name=name;

    this->_class=_class;

    this->rollNum=rollNum;

}

void setData() {

    int n;

    cout << "Enter the number of subjects" << endl;

    cin >> n;

    this->totalSubjects = n;

    for(int i=0;i<n;i++) {

        string subName, subCode;

        int marks, maxMarks;

        cout << "Enter the name, code, marks and max marks for subject " << i+1 << endl;

        cin >> subName;

        cin >> subCode;

        cin >> marks;

        cin >> maxMarks;

        this->subjectNames[i] = subName;

        this->subjectCodes[i] = subCode;

        this->marks[i] = marks;

        this->maxMarks[i] = maxMarks;

    }

}

void getData() {

    cout << "Subject wise marks of " << this->name << " are" <<endl;

```

```

cout << "Name\t\t" << "Code\t\t" << "Max Marks\t\t" << "Marks Obtained" << endl;

int totalMarks = 0, totalMaxMarks = 0;

double avg;

for(int i=0;i<this->totalSubjects;i++) {

    cout << this->subjectNames[i] << "\t\t" << this->subjectCodes[i] << "\t\t" << this->
    maxMarks[i] << "\t\t" << this->marks[i] << endl;

    totalMarks += this->marks[i];

    totalMaxMarks += this->maxMarks[i];

}

avg = ((double)totalMarks/(double)totalMaxMarks)*100.0;

cout << endl << "Grade of student " << this->name << " is: ";

if(avg >= 75.0) cout << "A" << endl << endl;

else if(avg >= 60.0) cout << "B" << endl << endl;

else if(avg >= 45.0) cout << "C" << endl << endl;

else if(avg >= 35.0) cout << "D" << endl << endl;

else cout << "F" << endl << endl;

}

};

int main() {

    cout << "Enter the number of students" << endl;

    int n;

    cin >> n;

    for(int i=1;i<=n;i++) {

        string name;

        int _class, rollNum;

        cout << "Enter the name, class and roll number of student " << i << endl;

```

```
cin >> name;

cin >> _class;

cin >> rollNum;

int choice;

cout << "Enter 0 to use default constructor, 1 to use parameterized constructor" << endl;

cin >> choice;

if(choice == 0) {

    Student* student = new Student();

    student->setStudentData(name, _class, rollNum);

    student->setData();

    student->getData();

} else {

    Student* student = new Student(name, _class, rollNum);

    student->setData();

    student->getData();

}

}
```

Output:

D:\sem-5\oop_Lab\2.exe

Enter the name, code, marks and max marks for subject 2

Sub2 102 96 100

Subject wise marks of Tanmay are

Name	Code	Max Marks	Marks Obtained
Sub1	101	89	89
Sub2	102	100	96

Grade of student Tanmay is: A

Enter the name, class and roll number of student 2

Ruben 12 34

Enter 0 to use default constructor, 1 to use parameterized constructor

1

Enter the number of subjects

2

Enter the name, code, marks and max marks for subject 1

Sub1 121 20 60

Enter the name, code, marks and max marks for subject 2

Sub2 122 89 90

Subject wise marks of Ruben are

Name	Code	Max Marks	Marks Obtained
Sub1	121	60	20
Sub2	122	90	89

Grade of student Ruben is: B

Process exited after 138.4 seconds with return value 0

Press any key to continue . . . █