Lab Number:	1
Student Name:	Siddhant Kedar
Roll No :	E-05

Title: Write a C++Program to display Names, Roll No., and grades of 3 students who have appeared in the examination. Declare the class of name, Roll No. and grade. Create an array of class objects. Read and display the contents of the array.

Learning Objective:

● Students will be able to understand the concept of array in C++ and writing a program using it

Learning Outcome:

- Ability to execute a simple C++ program with and without any inputs to the program based on arrays.
- Understanding the array in C++

Theory: C++ provides a data structure, the array, which stores a fixed-size sequential collection of elements of the same type. An array is used to store a collection of data, but it is often more useful to think of an array as a collection of variables of the same type.

Instead of declaring individual variables, such as number0, number1, ..., and number99, you declare one array variable such as numbers and use numbers[0], numbers[1], and ..., numbers[99] to represent individual variables. A specific element in an array is accessed by an index.

All arrays consist of contiguous memory locations. The lowest address corresponds to the first element and the highest address to the last element.

Algorithm:

1) Start

2) Define Max 10 so creating a limit with size 10

3) Create student class with variables for name, roll number and marks.

4) Get data from user about their name roll number and marks out of 500

5) Create an array with limit of 10

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6) Initialize if else loop for displaying data.

7) End

Program Code:

```cpp
#include<iostream>

using namespace std;

#define MAX 10

class student

{

private:

char name[30];

int rollNo;

int total;

float perc;

public:

void getDetails(void)
{
  cout << "Enter name: " ;

cin>>name;
```

```cpp
cout<<"Enter roll number:";

cin>>rollNo;

cout << "Enter total marks outof 500: ";

cin>>total;

perc=(float)total/500*100;
}



void putDetails(void);
};
void student:: putDetails(void)
{

cout <<"Student details:\n";

cout<<"Name:"<<name <<",RollNumber:" <<rollNo<<",Total:"<<total <<",Percentage:"<<perc;


}



int main()

{

student std[MAX];

int n,loop;
```

```cpp
cout<<"Enter total number of students:";

cin>>n;

if(n>MAX){

    cout<<"Out of range, limit is 10";

}
else{

for(loop=0;loop<n; loop++)

{

cout << "Enter details of student " << loop+1 << ":\n";

std[loop].getDetails();

}

cout << endl;

for(loop=0;loop<n;loop++)

{

cout << "Details of student " << (loop+1) << ":\n";

std[loop].putDetails();

}
}
```

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return 0;

}

Input Given:

Enter total number of students: 3

Details of student of 1

Name: Siddhant

Roll number: 5

Total marks: 400

Details of student 2

Name: Aryan
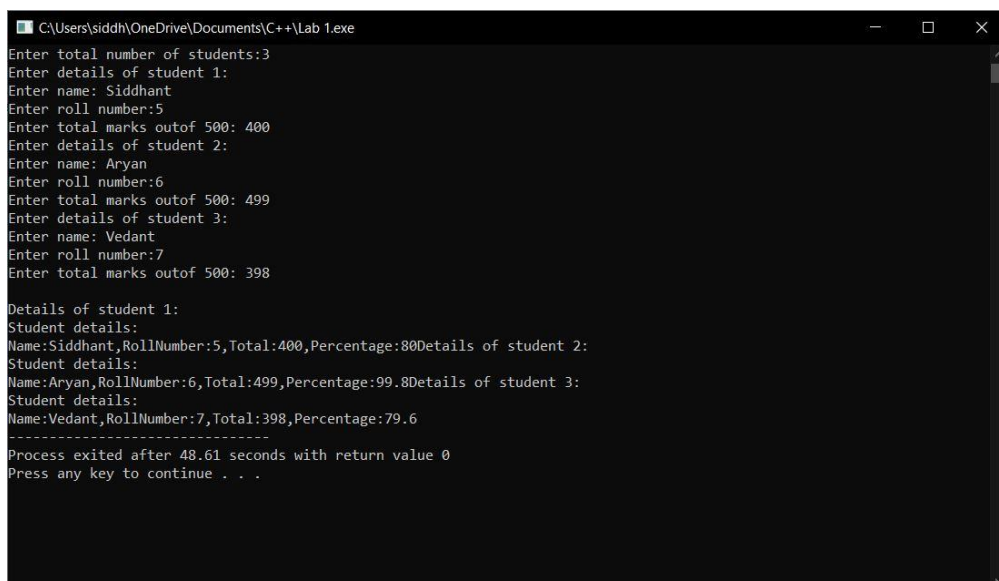
Roll number: 6

Total marks: 499

Details of student 3

Name: Vedant

Roll number: 7

Total marks: 398

Output:

```
C:\Users\siddh\OneDrive\Documents\C++\Lab 1.exe                          —    □    ×
Enter total number of students:3
Enter details of student 1:
Enter name: Siddhant
Enter roll number:5
Enter total marks outof 500: 400
Enter details of student 2:
Enter name: Aryan
Enter roll number:6
Enter total marks outof 500: 499
Enter details of student 3:
Enter name: Vedant
Enter roll number:7
Enter total marks outof 500: 398

Details of student 1:
Student details:
Name:Siddhant,RollNumber:5,Total:400,Percentage:80Details of student 2:
Student details:
Name:Aryan,RollNumber:6,Total:499,Percentage:99.8Details of student 3:
Student details:
Name:Vedant,RollNumber:7,Total:398,Percentage:79.6
------------------------------
Process exited after 48.61 seconds with return value 0
Press any key to continue . . .
```

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