C++ - LAB-5

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Q-17: Class with member variable and member functions

Ans: Source Code

```
#include <bits/stdc++.h>
using namespace std;
class myclass
{
    int a, b;
    public:
    void getdata(void);
    int add(void);
    void displaydata(void);
};

void myclass :: getdata(void)
{
    cout << "Enter two resp. : ";
    cin >> a >> b;
}

int myclass :: add(void)
{
    int c;
    c=a+b;
    return c;
}

void myclass :: displaydata(void)
{
    cout << "The sum of " << a << " and " << b << " is " << add();
}

int main()
{
    myclass obj;
    obj.getdata();
```

```
    obj.add();
    obj.displaydata();
    return 0;
}
```

Output:

Enter two resp. : 2 3

The sum of 2 and 3 is 5

Q-18: Create a Class Student with data members name, roll_no and marks of 5 subjects with member functions getdata() which will take input, average() which will calculate average, grade() which will calculate grade and display() which will display name, roll_no, grade of the student.
(a) Take input for 5 students
(b) Display all the student's information in details
in tabular form.

Ans: Source Code:

```
#include <bits/stdc++.h>
using namespace std;
int b[5];
char g[5];
float a[5];
class student
{
    int marks[5][5];
    int roll_no[5];
    string name[5];

    public:
    void getdata(void);
    void avg(void);
    void grade(void);
    void display(void);
};
```

```
void student :: getdata(void)
{
    int i, j;
    cout << "Enter student name:\n";
    for(i=0; i<5; i++)
    {
        cout << "\nStudent " << i+1 << ":";
        cin >> name[i];
    }
    cout << "Enter student roll no:\n";
    for(i=0; i<5; i++)
    {
        cout << "\nStudent " << i+1 << ":";
        cin >> roll_no[i];
    }
    cout << "Enter student marks:\n";
    for(i=0; i<5; i++)
    {
        for(j=0; j<5; j++)
        {
        cout << "\nStudent " << i+1 << "Subject " << j+1 << ":";
        cin >> marks[i][j];
        }
    }
}

void student :: avg(void)
{
    int sum, i, j;
    for(i=0; i<5; i++)
    {
        sum=0;
        for(j=0; j<5; j++)
        {
            sum=sum+marks[i][j];
        }
        a[i]=float(sum)/5;
        b[i]=sum/5;
    }
}

void student :: grade(void)
{
    int i;
    for(i=0; i<5; i++)
    {
        if(b[i] == 20 || b[i] == 19)
        g[i] = 'S';
```

```
        else if(b[i] == 18 || b[i] == 17)
        g[i] = 'A';
        else if(b[i] == 16 || b[i] == 15)
        g[i] = 'B';
        else if(b[i] == 14 || b[i] == 13)
        g[i] = 'C';
        else if(b[i] == 12 || b[i] == 11)
        g[i] = 'D';
        else if(b[i] == 10 || b[i] == 9)
        g[i] = 'E';
        else
        g[i] = 'F';

    }
}

void student :: display(void)
{
    int i;
    cout << "\nEntire Student detail:\n";
    for(i=0; i<5; i++)
    {
        cout << "Student Name: " << name[i] << ", Roll Number: " << roll_no[i]
 << ", Average marks out of 20: " << a[i] << ", Overall grade: " << g[i] << "\
n";
    }
}


int main()
{
    student obj;
    obj.getdata();
    obj.avg();
    obj.grade();
    obj.display();
    return 0;
}
```

Output:

Enter student name:

Student 1:Vivaan

Student 2:Ram

Student 3:Rohan

Student 4:Rahul

Student 5:Simron

Enter student roll no:

Student 1:1

Student 2:2

Student 3:3

Student 4:4

Student 5:5

Enter student marks:

Student 1Subject 1:11

Student 1Subject 2:12

Student 1Subject 3:13

Student 1Subject 4:14

Student 1Subject 5:15

Student 2Subject 1:18

Student 2Subject 2:18

Student 2Subject 3:19

Student 2Subject 4:20

Student 2Subject 5:18

Student 3Subject 1:15

Student 3Subject 2:15

Student 3Subject 3:14

Student 3Subject 4:13

Student 3Subject 5:12

Student 4Subject 1:17

Student 4Subject 2:18

Student 4Subject 3:16

Student 4Subject 4:15

Student 4Subject 5:20

Student 5Subject 1:20

Student 5Subject 2:20

Student 5Subject 3:20

Student 5Subject 4:20

Student 5Subject 5:19

Entire Student detail:

Student Name: Vivaan, Roll Number: 1, Average marks out of 20: 13, Overall grade: C

Student Name: Ram, Roll Number: 2, Average marks out of 20: 18.6, Overall grade: A

Student Name: Rohan, Roll Number: 3, Average marks out of 20: 13.8, Overall grade: C

Student Name: Rahul, Roll Number: 4, Average marks out of 20: 17.2, Overall grade: A

Student Name: Simron, Roll Number: 5, Average marks out of 20: 19.8, Overall grade: S

Q-19: Write a class to implement a simple queue. A queue is very similar to a stack except the data is removed in first-in-first-out (FIFO) order.

Ans: Source Code:

```
#include <bits/stdc++.h>
using namespace std;
int i=0;
int j=0;
class queue1
{
    int a[5];
    public:
    void put(int);
    int get(void);
};

void queue1 :: put(int item)
{
    a[i]=item;
    i++;

    cout << "The value " << item << " got inserted\n";

}

int queue1 :: get(void)
{
    int val;
    val=a[j];
```

```
    j++;
    return val;
}

int main()
{
    int n;
    queue1 obj;
    cout << "Only 5 numbers to be inserted\n";
    obj.put(1);
    obj.put(2);
    obj.put(3);
    obj.put(4);
    obj.put(5);

    for(n=0; n<5; n++)
    cout << "Element " << n+1 << " = " << obj.get() << "\n";
    return 0;
}
```

Output:

Only 5 numbers to be inserted

The value 1 got inserted

The value 2 got inserted

The value 3 got inserted

The value 4 got inserted

The value 5 got inserted

Element 1 = 1

Element 2 = 2

Element 3 = 3

Element 4 = 4

Element 5 = 5