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