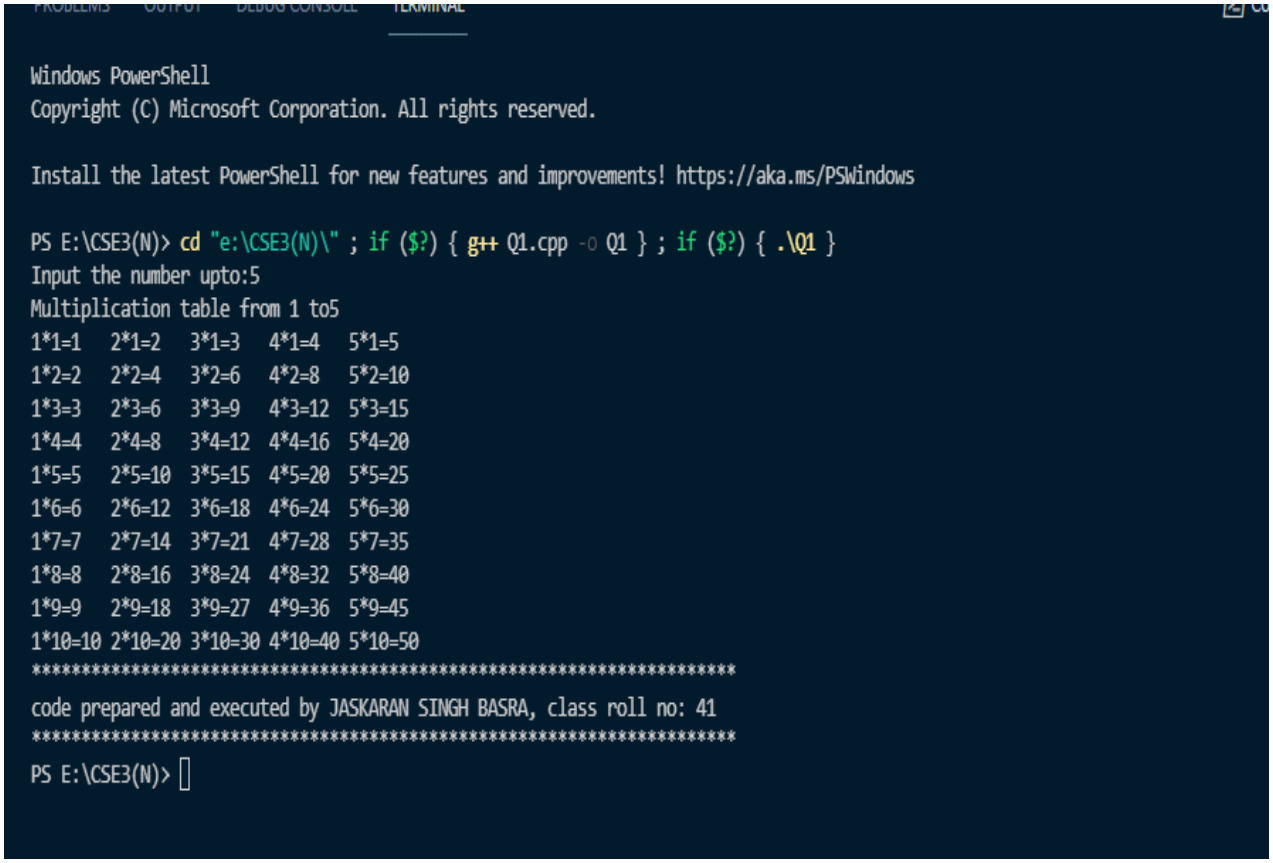
SOURCE CODE

Q1. Write a program in C++ to display the multiplication table vertically from 1 to n

```
// Q1. Write a program in C++ to display the multiplication table vertically from 1 to

#include <iostream>

using namespace std;

int main()

{

   int n;

   cout << "Input the number upto:";

   cin >> n;

   cout << "Multiplication table from 1 to" << n << endl;

   for (int i = 1; i <= 10; ++i)

   {

      for (int j = 1; j <= n; ++j)

      {

         cout << j << "*" << i << "=" << i * j << "\t";

      }

      cout << endl;

   }



cout<<"**********************************************************************
**"<<endl;

   cout<<"code prepared and executed by JASKARAN SINGH BASRA, class roll no: 41"<<endl;


cout<<"**********************************************************************
**"<<endl;

   return 0;

}
```

OUTPUT

Q1. Write a program in C++ to display the multiplication table vertically from 1 to n



SOURCE CODE

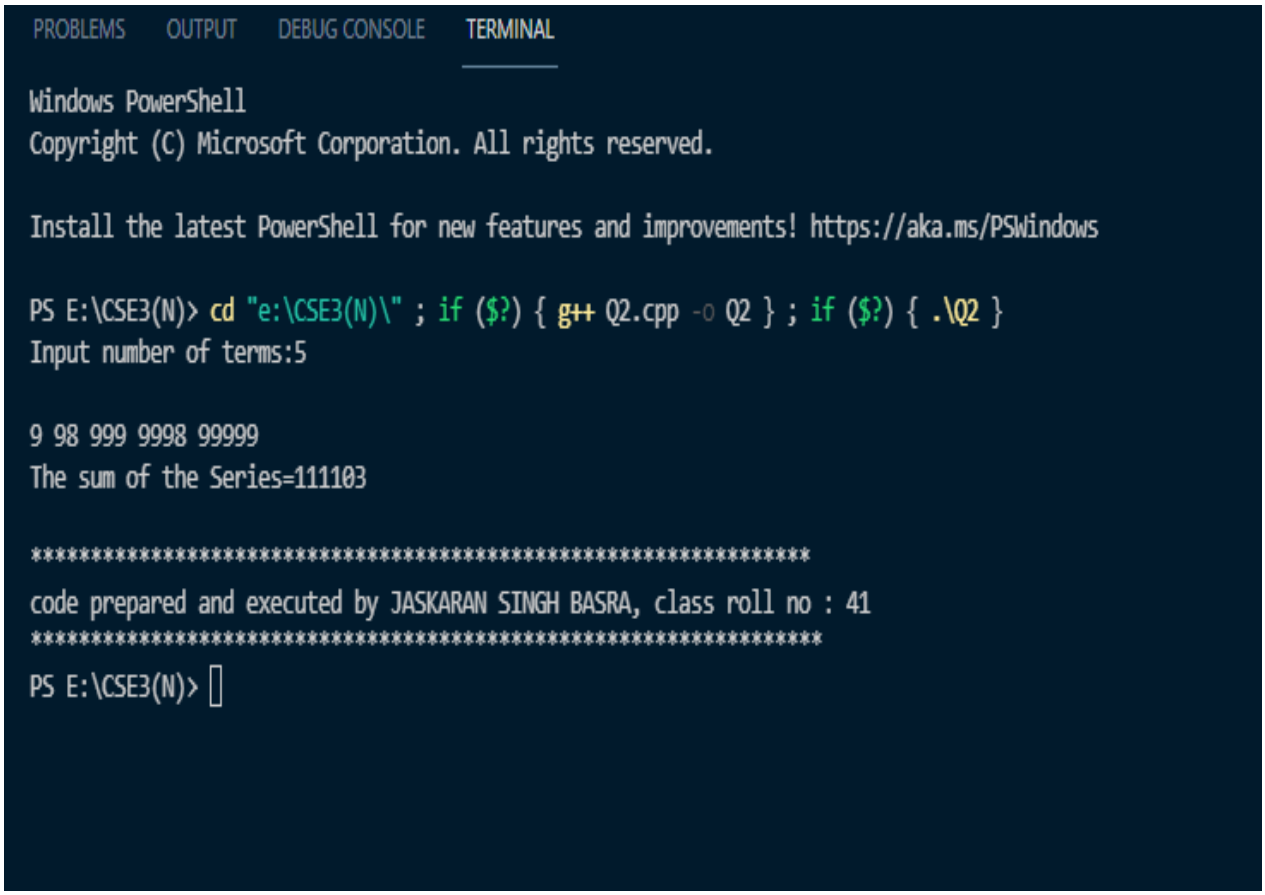
2. Write a program in C++ to display the sum of the series [9 + 99 + 999 + 9999 ...] ?

```
// 2. Write a program in C++ to display the sum of the series [ 9 + 99 + 999 + 9999 ...] ?
#include <iostream>
#include <math.h>
using namespace std;
int main()
{
   int n, p = 0;
   int sum = 0;
   cout << "Input number of terms:";
   cin >> n;
   cout << endl;
   for (int i = 1; i <= n; i++)
   {
      p = pow(10, i) - 1;
      cout << p << " ";
      sum = sum + p;
   }
   cout << "\n";
   cout << "The sum of the Series=" << sum;

cout<<"\n\n**********************************************************************
"<<endl;
   cout<<"code prepared and executed by JASKARAN SINGH BASRA, class roll no : 41"<<endl;

cout<<"**********************************************************************"<<
endl;
```

```
    return 0;
}
```

OUTPUT

2. Write a program in C++ to display the sum of the series [9 + 99 + 999 + 9999 ...] ?



SOURCE CODE

3. Write a C++ program to sort a given array of 0s, 1s and 2s. In the final array put all 0s first, then all 1s and all 2s in last.

```
//3. Write a C++ program to sort a given array of 0s, 1s and 2s. In the final array put all 0s first, then all 1s and all 2s in last.

#include <iostream>

using namespace std;

int main()

{

   int arr[100], n, temp;

   cin >> n;

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

      cin >> arr[i];

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

   {

      cout<<arr[i];

   }

   printf("\n");

   printf("\n");

   printf("\n");

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

   {

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

      {

         if (arr[i] > arr[j])

         {

            temp = arr[i];

            arr[i] = arr[j];
```

```
            arr[j] = temp;
          }
        }
    }
    for (int i = 0; i < n; i++)
    {
        cout << arr[i];
    }


cout <<
"\n\n*****************************************************************" <<
endl;
cout << "code prepared and executed by JASKARAN SINGH BASRA, class roll no : 41" << endl;
cout << "*****************************************************************"
<< endl;
}
```

SOURCE CODE

4. Create a C++ program to perform survey on four different model of Maruti (Maruti -K10, Zen-Astelo, Wagnor, Maruti- SX4) owned by person living in four metro cities(Delhi, Mumbai, Chennai & Kolkatta). Display tabulated report like format given below:

```
#include <iostream>
#include <iomanip>
using namespace std;
int main()
{

   int arr[10][10];
   int choice;
   int citycode, carcode;
   for (int i = 0; i <= 4; i++)
   {
      for (int j = 0; j <= 4; j++)
      {
         arr[i][j] = 0;
      }
   }
   do
   {
      cout << "***main menu***" << endl;
      cout << "press [0] for delhi" << endl;
      cout << "PRESS [1] for mumbai" << endl;
      cout << "press [2] for kolkata" << endl;
      cout << "press [3] for chennai" << endl;
```

```
    cout << "press [0] for K-10" << endl;
    cout << "press [1] for Zen astelo" << endl;
    cout << "press [2] for wagnor" << endl;
    cout << "press [3] for SX-4" << endl;
    cout << "enter city code" << endl;
    cin >> citycode;
    cout << "enter car code";
    cin >> carcode;
    arr[citycode][carcode]++;
    cout << "do you want to continue?1 for yes 0 for no";
    cin >> choice;
} while (choice == 1);

cout << setw(10) << "\t k-10\t Zen Asteloo\t Wagnor\t Sx-4 " << endl;

for (int i = 0; i <= 4; i++)
{
    if (i == 0)
        cout << "delhi";
    else if (i == 1)
        cout << "mumbai";
    else if (i == 2)
        cout << "kolkata";
    else
        cout << "chennai";
    for (int j = 0; j <= 4; j++)
    {
        cout << " " << arr[i][j] << "\t";
    }
```

```
        cout << endl;
    }
    cout <<
"\n\n**********************************************************************" <<
endl;
    cout << "code prepared and executed by JASKARAN SINGH BASRA, class roll no : 41" <<
endl;
    cout <<
"**********************************************************************" << endl;
    return 0;
}
```

OUTPUT

```
press [2] for kolkata
press [3] for chennai
press [0] for K-10
press [1] for Zen astelo
press [2] for wagnor
press [3] for SX-4
enter city code
0
enter car code0
do yoU want to continue?1 for yes 0 for no1
***main menu***
press [0] for delhi
PRESS [1] for mumbai
press [2] for kolkata
press [3] for chennai
press [0] for K-10
press [1] for Zen astelo
press [2] for wagnor
press [3] for SX-4
enter city code
1
enter car code3
do yoU want to continue?1 for yes 0 for no0
         k-10    Zen Asteloo     Wagnor  Sx-4
delhi 1  0       0       0       0
mumbai 0         0       0       1       0
kolkata 0        0       0       0       0
chennai 0        0       0       0       0
chennai 0        0       0       0       0


*****************************************************************
code prepared and executed by JASKARAN SINGH BASRA, class roll no : 41
*****************************************************************
PS E:\CSE3(N)>
```

SOURCE CODE

Q5-Write a program to read the table elements into a two-dimensional array temperature, and to find the city and day corresponding to (a) the highest temperature and (b) the lowest temperature.

```
#include <iostream>
#include <iomanip>
using namespace std;
int main()
{

   float arr[5][5];
   string cities[] = {"Delhi", "Mumbai", "Kolkatta", "Chennai", "Dehradun"};
   int max, min, m1, m2, l1, l2;
   for (int i = 0; i < 5; i++)
   {
      cout << "\n\nEnter temperatures for day " << i + 1 << "::";
      for (int j = 0; j < 5; j++)
      {
         if (j == 0)
         {
            cout << "\nDelhi:";
         }
         else if (j == 1)
         {
            cout << "\nMumbai:";
         }
         else if (j == 2)
         {
```

```
        cout << "\nKolkatta:";
    }
    else if (j == 3)
    {
        cout << "\nChennai:";
    }
    else if (j == 4)
    {
        cout << "\nDehradun:";
    }
    cin >> arr[i][j];
    if (i == 0 && j == 0)
    {
        max = arr[i][j];
        min = arr[i][j];
    }
    if (arr[i][j] > max)
    {
        max = arr[i][j];
        m1 = i;
        m2 = j;
    }
    else if (arr[i][j] < min)
    {
        min = arr[i][j];
        l1 = i;
        l2 = j;
    }
}
```

```
    }


    cout << "\n\n************Recorded table**************\n\n";
    cout << "Day    \tDelhi \t\tMumbai \t\tKolkatta\tChennai   \tDehradun\n";
    for (int i = 0; i < 5; i++)
    {
        cout << " " << i + 1 << " \t";
        for (int j = 0; j < 5; j++)
        {
            cout << setw(8) << arr[i][j] << "\t";
        }
        cout << endl;
    }
    cout << "\n\nMaximum temperature is " << arr[m1][m2] << " at day " << m1 + 1 << " in
city " << cities[m2] << "\n";
    cout << "\n\nMinimum temperature is " << arr[l1][l2] << " at day " << l1 + 1 << " in city "
<< cities[l2] << "\n";


    cout <<
"\n\n*****************************************************************" <<
endl;
    cout << "code prepared and executed by JASKARAN SINGH BASRA, class roll no : 41" <<
endl;
    cout <<
"*****************************************************************" << endl;
    return 0;
}
```

OUTPUT

```
Windows PowerShell
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PS E:\CSE3(N)> cd "e:\CSE3(N)\" ; if ($?) { g++ Q5.cpp -o Q5 } ; if ($?) { .\Q5 }


Enter temperatures for day 1::
Delhi:30

Mumbai:32

Kolkatta:35

Chennai:40

Dehradun:45


Enter temperatures for day 2::
Delhi:50

Mumbai:55

Kolkatta:52

Chennai:45

Dehradun:42


Enter temperatures for day 3::
Delhi:46

Chennai:50

Dehradun:48


Enter temperatures for day 5::
Delhi:49

Mumbai:50

Kolkatta:32

Chennai:42

Dehradun:39


**********Recorded table**********

Day     Delhi           Mumbai          Kolkatta        Chennai         Dehradun
 1           30              32              35              40              45
 2           50              55              52              45              42
 3           46              38              39              55              52
 4           35              45              51              50              48
 5           49              50              32              42              39


Maximum temperature is 55 at day 2 in city Mumbai
PS E:\CSE3(N)>
PS E:\CSE3(N)>
```

SOURCE CODE

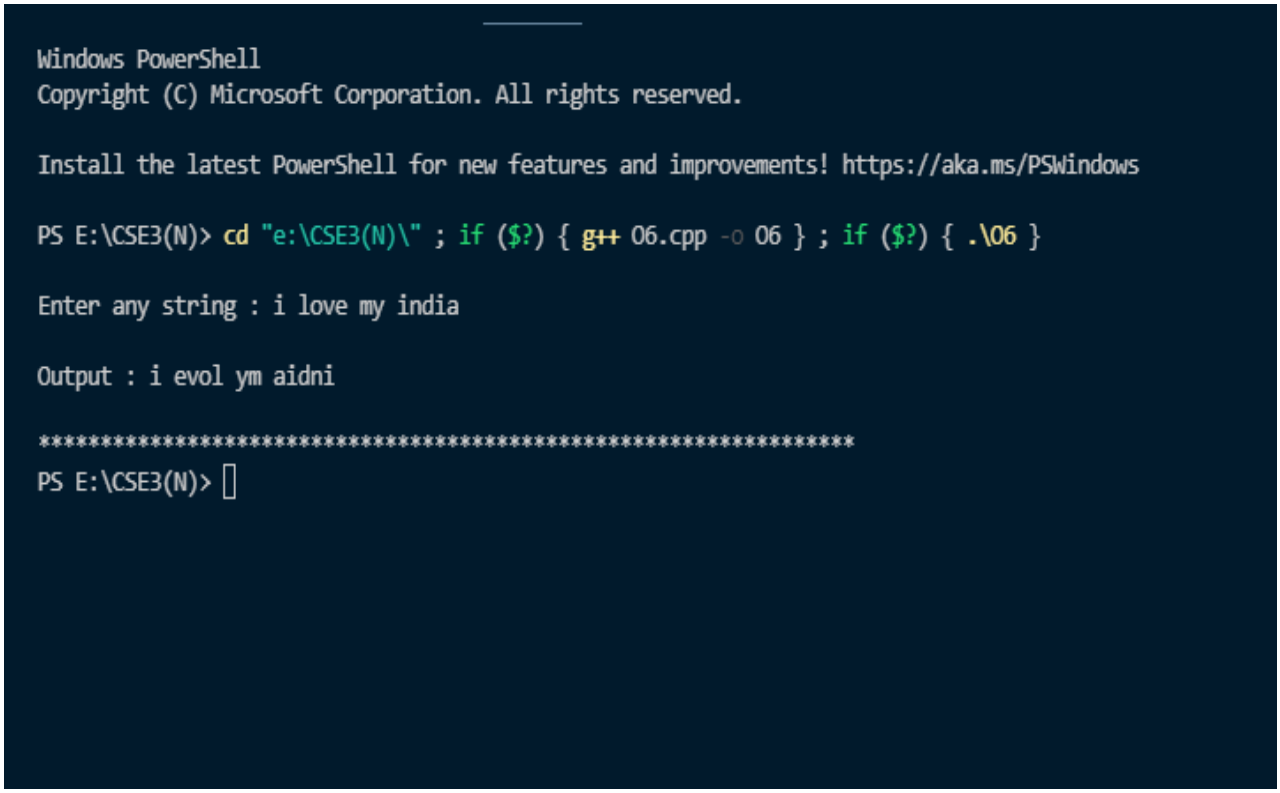
6. Write a c++ program to reverse each word of string. e.g. Input- I love my India Output – I evol ym aidnI.

```
#include <iostream>
using namespace std;
int main()
{
   string abc;
   cout << "\nEnter any string : ";
   getline(cin, abc);
   int l = 0;
   cout << "\nOutput : ";
   for (int i = l; i < abc.length(); i++)
   {
      if (abc[i] == ' ')
      {
         for (int j = i - 1; j >= l; j--)
         {
            cout << abc[j];
            if (j == l)
            {
               cout << ' ';
               l = i + 1;
            }
         }
      }
      if (i == (abc.length() - 1))
      {
         for (int j = i; j >= l; j--)
```

```
        {
            cout << abc[j];
        }
      }
   }
   cout << "\n\n";
   cout << "\n\n**********************************************************************" <<
endl;
   cout << "code prepared and executed by JASKARAN SINGH BASRA, class roll no : 41" << endl;
   cout << "**********************************************************************" <<
endl;
}
```

OUTPUT

6. Write a c++ program to reverse each word of string. e.g. Input- I love my India Output – I evol ym aidnI.



SOURCE CODE

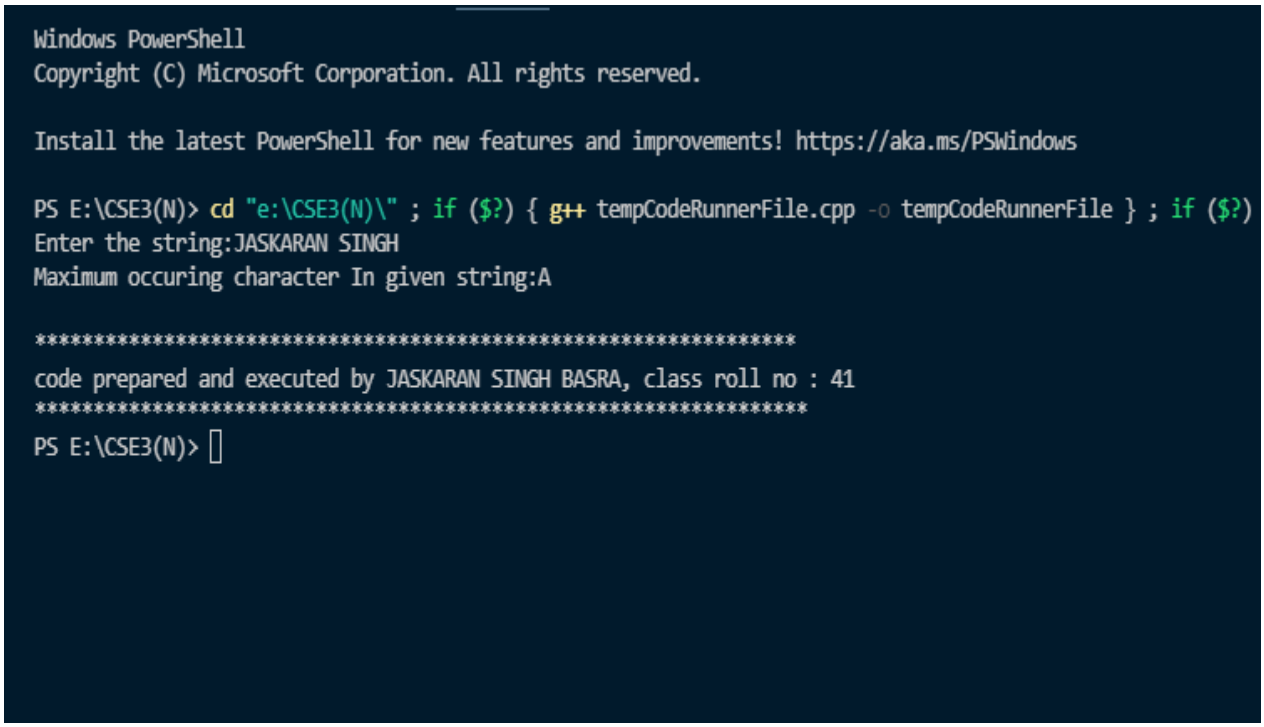
7. Write a C++ program to find the maximum occurring character in a string

```
#include <iostream>
#include <string>
using namespace std;
main()
{
   string S;
   cout << "Enter the string:";
   getline(cin, S);
   int n = S.length(), f[n];
   for (int i = 0; i < n; f[i++] = 0)
      ;
   for (int i = 0; i < n; ++i)
      for (int j = i + 1; j < n; ++j)
         if (S[i] == S[j] && S[i] != ' ')
            f[i]++;
   char m;
   int k = 0;
   for (int i = 0; i < n; ++i)
      if (f[i] > k)
      {
         k = f[i];
         m = S[i];
      }
   if (k == 0)
      cout << "There Is No Maximum occuring character in given string";
   else
```

```
    cout << "Maximum occuring character In given string:" << m;

   cout <<
"\n\n*****************************************************************" <<
endl;

   cout << "code prepared and executed by JASKARAN SINGH BASRA, class roll no : 41" <<
endl;

   cout <<
"*****************************************************************" << endl;

}
```

OUTPUT

7. Write a C++ program to find the maximum occurring character in a string



SOURCE CODE

8. A class Telcall calculates the monthly phone bill of a consumer. Some of the members of

the class are given below:

Class name:

Data members/instance variable : phno(phone Number), sname(subscriber Name)

n(number of calls made) and amt (bill amount).

Member function/methods:

TelCall() : Parameterized constructor to assign values to data

members.

Void compute( ) : to calculate the phone bill amount base on the slabs given below.

Void display( ) : to display the details in the specified format.

Number of calls Rate

1 – 100 Rs. 500/- rental charge only

101 – 200 Rs 1.00 per call + rental charge

201-300 Rs. 1.20 per call + rental charge

Above 300 Rs. 1.50 per call + rental charge

```
#include <iostream>
#include <string>
using namespace std;
class Telcall
{
   long long int phno;
   string sname;
```

```
    int n;
    float amt;

public:
    Telcall(string name, long long int phno, int n)
    {
        sname = name;
        this->phno = phno;
        this->n = n;
    }
    void compute()
    {
        amt = 500;
        if (n >= 101 && n <= 200)
            amt = amt + n;
        else if (n >= 201 && n <= 300)
            amt = amt + (float)n * (1.20);
        else if (n > 300)
            amt = amt + (float)n * (1.50);
    }
    void display()
    {
        cout << "\nName: " << sname;
        cout << "\nPhone Number: " << phno;
        cout << "\nNo of Calls Made: " << n;
        cout << "\nBill Amount: " << amt;
    }
};
int main()
```

```
{

    int n, amt;
    string name;
    long long int phno = 0;
    cout << "\nEnter Your Name:";
    getline(cin, name);
    cout << "\nEnter Phone Number:";
    cin >> phno;
    cout << "\nEnter Number of Calls Made:";
    cin >> n;
    Telcall obj(name, phno, n);
    obj.compute();
    obj.display();


    cout <<
"\n\n**********************************************************************" <<
endl;
    cout << "code prepared and executed by JASKARAN SINGH BASRA, class roll no : 41" <<
endl;
    cout <<
"**********************************************************************" << endl;
    return 0;
}
```

OUTPUT

```
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PS E:\CSE3(N)> cd "e:\CSE3(N)\" ; if ($?) { g++ 08.cpp -o 08 } ; if ($?) { .\08 }

Enter Your Name:JASKARAN SINGH

Enter Phone Number:7417441235

Enter Number of Calls Made:200

Name: JASKARAN SINGH
Phone Number: 7417441235
No of Calls Made: 200
Bill Amount: 700

****************************************************************
code prepared and executed by JASKARAN SINGH BASRA, class roll no : 41
****************************************************************
PS E:\CSE3(N)> cd "e:\CSE3(N)\" ; if ($?) { g++ tempCodeRunnerFile.cpp -o tempCodeRunnerFile } ; if ($?) { .\tempCodeRunnerFile }
```

SOURCE CODE

9. Design a class to represent bank account. Includes the following members:

▪ Name of depositor

▪ Account number

▪ Type of account

▪ Balance amount in the account

Methods:

▪ To assign initial values

▪ To deposit an amount

▪ To withdraw an amount after checking balance.

▪ To display the name and balance.

Write a program to incorporate the constructor to provide initial values.

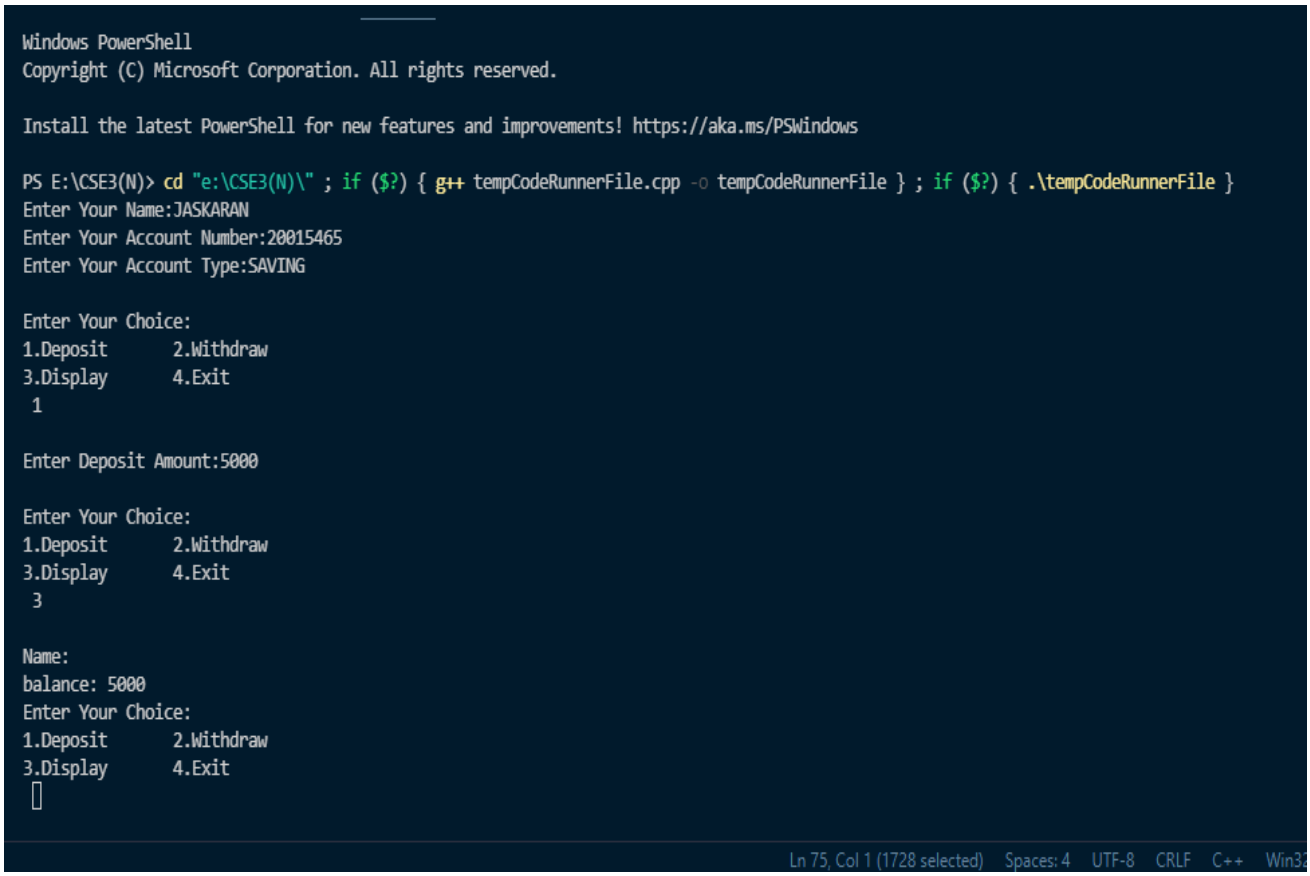
```
#include <iostream>
#include <string>
using namespace std;
class Bank
{
   string name;
   long int accno;
   string typeacc;
   float balance;

public:
   Bank(string name, long long int acc, string type)
   {
      name = name;
      accno = acc;
```

```
        typeacc = type;
        balance = 0.0;
    }
    void deposit()
    {
        float t;
        cout << "\nEnter Deposit Amount:";
        cin >> t;
        balance += t;
    }
    void withdraw()
    {
        float t;
        cout << "\nEnter Withdraw Amount:";
        cin >> t;
        balance -= t;
    }
    void display()
    {
        cout << "\nName: " << name;
        cout << "\nbalance: " << balance;
    }
};
int main()
{
    string name, typeacc;
    long long int accno;
    cout << "Enter Your Name:";
    cin >> name;
```

```
    cout << "Enter Your Account Number:";
    cin >> accno;
    cout << "Enter Your Account Type:";
    cin >> typeacc;
    Bank obj(name, accno, typeacc);
    int ops;
    do
    {
        cout << "\nEnter Your Choice:";
        cout << "\n1.Deposit\t2.Withdraw\n3.Display\t4.Exit\n ";
        cin >> ops;
        switch (ops)
        {
        case 1:
            obj.deposit();
            break;
        case 2:
            obj.withdraw();
            break;
        case 3:
            obj.display();
            break;
        }
    } while (ops != 4);


    cout <<
"\n\n*****************************************************************" <<
endl;
    cout << "code prepared and executed by JASKARAN SINGH BASRA, class roll no : 41" <<
endl;
```

```
    cout <<
"**********************************************************************" << endl;

    return 0;

}
```

OUTPUT


Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.
Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows
PS E:\CSE3(N)> cd "e:\CSE3(N)\" ; if ($?) { g++ tempCodeRunnerFile.cpp -o tempCodeRunnerFile } ; if ($?) { .\tempCodeRunnerFile }
Enter Your Name:JASKARAN
Enter Your Account Number:20015465
Enter Your Account Type:SAVING
Enter Your Choice:
1.Deposit 2.Withdraw
3.Display 4.Exit
1
Enter Deposit Amount:5000
Enter Your Choice:
1.Deposit 2.Withdraw
3.Display 4.Exit
3
Name:
balance: 5000
Enter Your Choice:
1.Deposit 2.Withdraw
3.Display 4.Exit
Ln 75, Col 1 (1728 selected) Spaces: 4 UTF-8 CRLF C++

SOURCE CODE

10. Write a program to implement array of object.

```
#include <iostream>
using namespace std;
class Box
{
public:
   int ctr;
};
int main()
{

   Box obj[10];
   for (int i = 0; i < 10; i++)
      obj[i].ctr = i + 3;
   for (int i = 0; i < 10; i++)
      cout << obj[i].ctr << " ";

   cout <<
"\n\n**********************************************************************" <<
endl;
   cout << "code prepared and executed by JASKARAN SINGH BASRA, class roll no : 41" <<
endl;
   cout <<
"**********************************************************************" << endl;
   return 0;
}
```

OUTPUT

10. Write a program to implement array of object.

SOURCE CODE

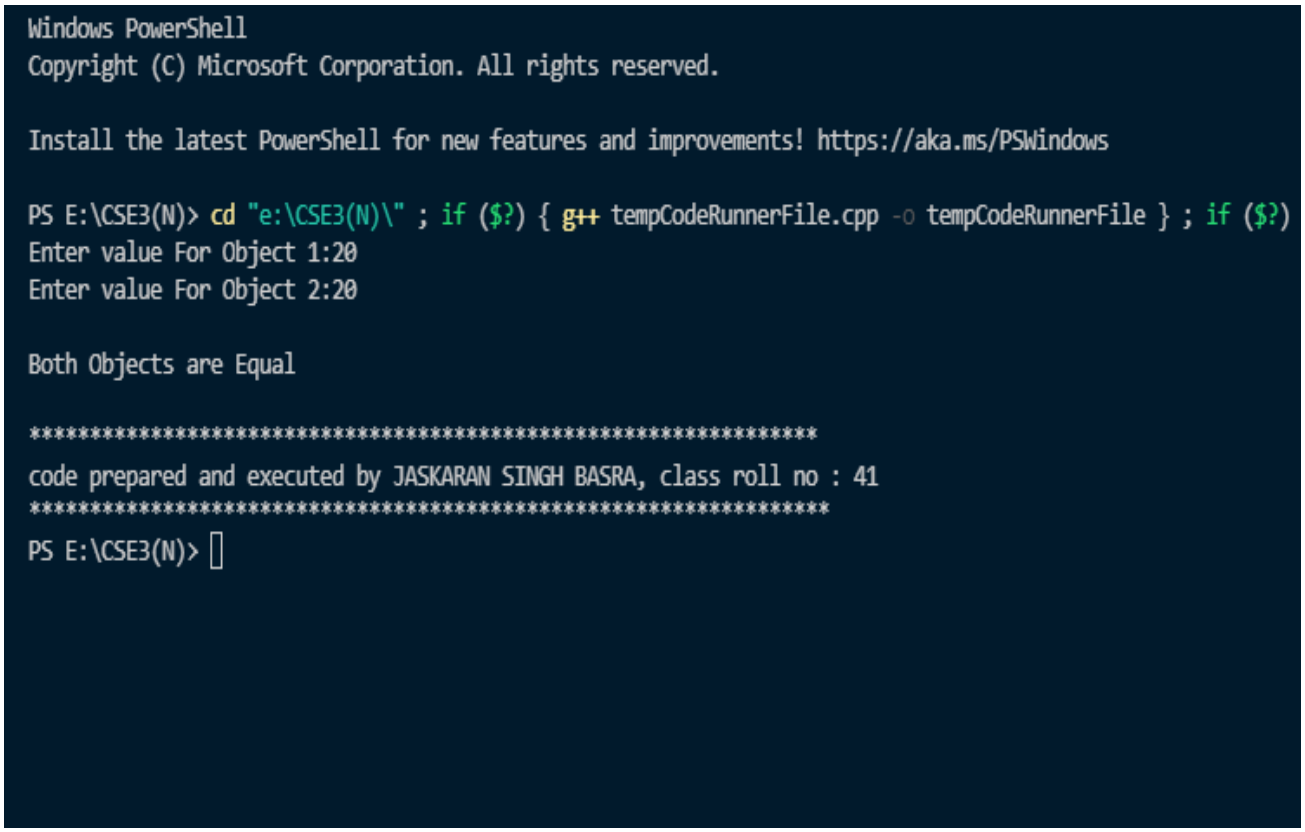
11. Write a program to compare two objects using friend functions

```
#include <iostream>
#include <string.h>
using namespace std;
class Box
{
   string character;

public:
   Box(string n)
   {
      character = n;
   }
   friend void compare(Box &obj1, Box &obj2);
};
void compare(Box &objj1, Box &objj2)
{
   if (objj1.character == objj2.character)
      cout << "\nBoth Objects are Equal";
   else
      cout << "\nObjects are not Equal";
}
int main()
{

   string n1, n2;
   cout << "Enter value For Object 1:";
```

```
    cin >> n1;
    cout << "Enter value For Object 2:";
    cin >> n2;
    Box obj1(n1);
    Box obj2(n2);
    compare(obj1, obj2);


    cout <<
"\n\n**********************************************************************" <<
endl;
    cout << "code prepared and executed by JASKARAN SINGH BASRA, class roll no : 41" <<
endl;
    cout <<
"**********************************************************************" << endl;
    return 0;
}
```

OUTPUT

11. Write a program to compare two objects using friend functions



SOURCE CODE

12 Create a class of Employ, in that considers their names, age, and employee code. In the same

class, create a - (subtract) overloading operator to find the age gap of two employees?

Example:

[Employ is a Class in C++]

Employ e1("Nitin", 30, "E001");

Employ e2("Amit", 25, "E002");

int diff = e1 - e2;

```
#include <iostream>
#include <string.h>
using namespace std;
class Employ
{
   string name;
   int age;
   string empcode;

public:
   Employ(string name, int age, string empcode)
   {
      this->name = name;
      this->age = age;
      this->empcode = empcode;
   }
   int operator-(Employ &objj)
```

```
    {
        int diff = age - objj.age;
        if (diff < 0)
            return -diff;
        else
            return diff;
    }
};
int main()
{
    string name, empcode;
    int age;
    cout << "Enter Object 1 Employ Name:";
    cin >> name;
    cout << "Enter Object 1 Employ Code:";
    cin >> empcode;
    cout << "Enter Object 1 Employ age:";
    cin >> age;
    Employ e1(name, age, empcode);
    cout << "Enter Object 2 Employ Name:";
    cin >> name;
    cout << "Enter Object 2 Employ Code:";
    cin >> empcode;
    cout << "Enter Object 2 Employ age:";
    cin >> age;
    Employ e2(name, age, empcode);
    int diff = e1 - e2;
    cout << "\nAge gap = " << diff;
```

```
    cout <<
"\n\n**********************************************************************" <<
endl;

    cout << "code prepared and executed by JASKARAN SINGH BASRA, class roll no : 41" <<
endl;

    cout <<
"**********************************************************************" << endl;

    return 0;

}
```

OUTPUT

```
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PS E:\CSE3(N)> cd "e:\CSE3(N)\" ; if ($?) { g++ Q12.cpp -o Q12 } ; if ($?) { .\Q12 }
Enter Object 1 Employ Name:JASKARAN
Enter Object 1 Employ Code:JSK
Enter Object 1 Employ age:50
Enter Object 2 Employ Name:HARSH
Enter Object 2 Employ Code:HAR
Enter Object 2 Employ age:22

Age gap = 28

*****************************************************************
code prepared and executed by JASKARAN SINGH BASRA, class roll no : 41
*****************************************************************
PS E:\CSE3(N)> cd "e:\CSE3(N)\" ; if ($?) { g++ tempCodeRunnerFile.cpp -o tempCodeRunnerFile } ; if ($?) { .\tempCodeRunnerFile }
```

SOURCE CODE

13. Write a program to count number of objects created for a class.

```
#include <iostream>
using namespace std;
class A
{
   static int ctr;

public:
   A()
   {
      ctr++;
   }
   static int callobj()
   {
      return ctr;
   }
};
int A::ctr = 0;
int main()
{

   A obj[21];
   cout << "Objects Created = " << obj[0].callobj();
   cout <<
"\n\n**********************************************************" <<
endl;
```

```
    cout << "code prepared and executed by JASKARAN SINGH BASRA, class roll no : 41" <<
endl;
    cout <<
"**********************************************************************" << endl;
    return 0;
}
```

OUTPUT

13. Write a program to count number of objects created for a class.

SOURCE CODE

14. Write a C++ program to declare a class. Declare pointer to class. Initialize and display the contents of the class member.

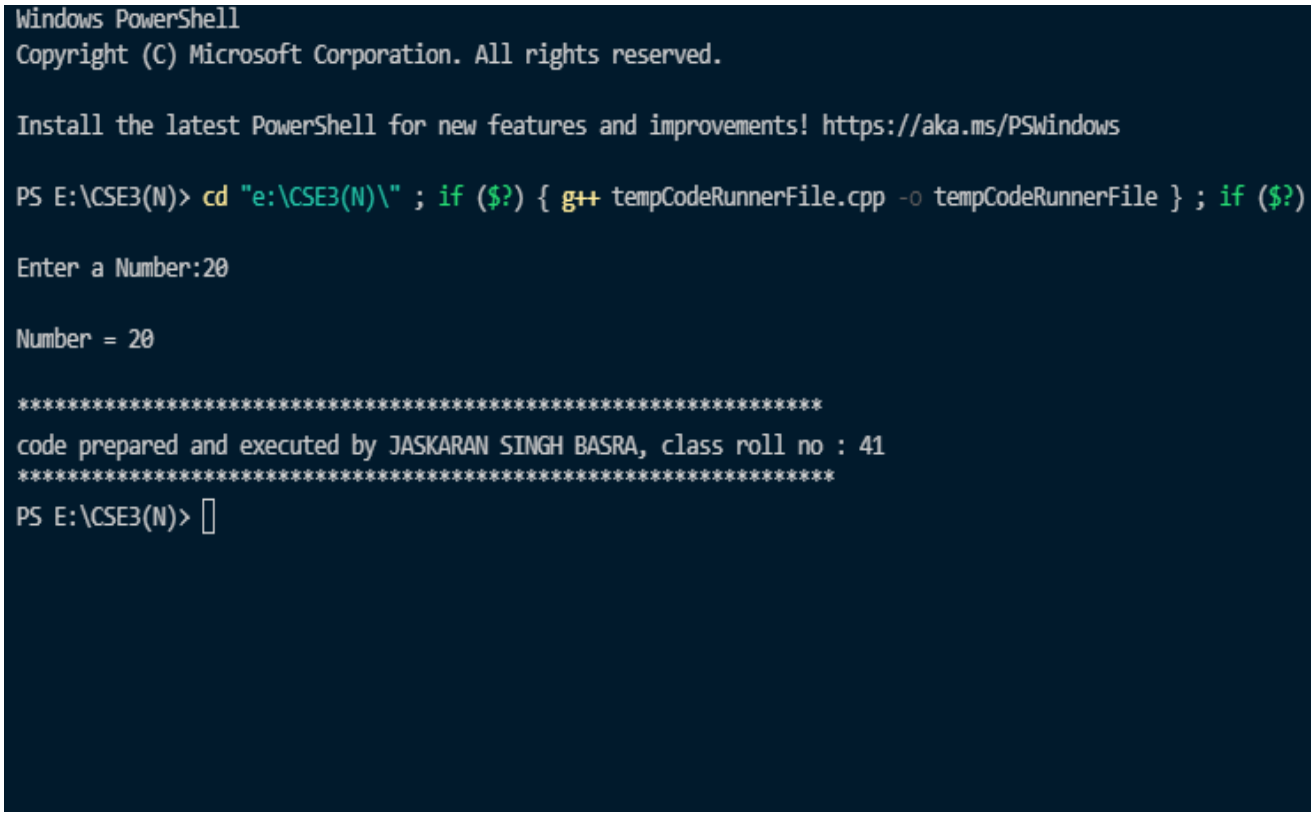
```
#include <iostream>
using namespace std;
class A
{
   int num;
public:
   A()
   {
      num = 0;
   }
   void change()
   {
      cout << "\nEnter a Number:";
      cin >> num;
   }
   void display()
   {
      cout << "\nNumber = " << num;
   }
};
int main()
{
   A obj;
   A *ptr = &obj;
   ptr->change();
```

```
    ptr->display();


    cout <<
"\n\n**********************************************************************" <<
endl;
    cout << "code prepared and executed by JASKARAN SINGH BASRA, class roll no : 41" <<
endl;
    cout <<
"**********************************************************************" << endl;
    return 0;
}
```

OUTPUT

14. Write a C++ program to declare a class. Declare pointer to class. Initialize and display the contents of the class member.



SOURCE CODE

15. Write a C++ program to use scope resolution operator. Display the various values of the same variables declared at different scope levels.

```
#include <iostream>
using namespace std;
namespace Random
{
   int num = 101;
}
int num = 100;
int main()
{
   int num = 102;
   cout << "\nAt Local Scope: " << num;
   cout << "\nAt Global Scope: " << ::num;
   cout << "\nAt Namespace Scope: " << Random::num;
   cout <<
"\n\n**********************************************************************" <<
endl;
   cout << "code prepared and executed by JASKARAN SINGH BASRA, class roll no : 41" <<
endl;
   cout <<
"**********************************************************************" << endl;
   return 0;
}
```

OUTPUT

15. Write a C++ program to use scope resolution operator. Display the various values of the same variables declared at different scope levels.