Name - Akriti Choudhary
Roll number - 2005776
Lab5
Subject - OOP lab
Class - B14
Branch - CSE
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Question 1 :WAP to find volume of a sphere ,a cylinder and a cuboid using function overloading.

```
#include <iostream>
#define pi 3.14
using namespace std;
class vol
{
public:
   int volume(int r);
   int volume(int r, int h);
   int volume(int l, int b, int h);
};
int vol::volume(int r)
{
   return 1.33 * pi * r * r * r;
}
int vol::volume(int r, int h)
{
   return pi * r * r * h;
}
int vol::volume(int l, int b, int h)
{
   return l * b * h;
}

int main()
{
   vol v;
   int r, h, l, b;
   int ch;
   cout << "Enter choice:\n1 - volume of sphere\n2 - volume of cylinder\n3 - volume of cuboid";
   cout << "\n-1 to exit\n";
   cin >> ch;
   while (ch != -1)
   {
      switch (ch)
      {
      case 1:
         cout << "Enter the radius of sphere :" << endl;
         cin >> r;
         cout << "Result = " << v.volume(r)<<endl;
         break;
      case 2:
         cout << "Enter the radius and height of cylinder :" << endl;
         cin >> r >> h;
         cout << "Result = " << v.volume(r, h)<<endl;
         break;
      case 3:
         cout << "Enter the l, b and h of cuboid :" << endl;
         cin >> l >> b >> h;
         cout << "Result = " << v.volume(l, b, h)<<endl;
         break;

      default:
         cout << "Wrong choice " << endl;
```

```
        break;
      }
      cout << "Enter choice:\n1 - volume of sphere\n2 - volume of cylinder\n3 - volume of cuboid";
      cout << "\n-1 to exit\n";
      cin >> ch;
    }
    cout << "Exit" << endl;
    return 0;
}
```

```
PS D:\KIIT_NOTES\2nd year sem_3\OOP_lab\26_8_2021> ./volume
Enter choice:
1 - volume of sphere
2 - volume of cylinder
3 - volume of cuboid
-1 to exit
1
Enter the radius of sphere :
2
Result = 33
Enter choice:
1 - volume of sphere
2 - volume of cylinder
3 - volume of cuboid
-1 to exit
2
Enter the radius and height of cylinder :
1 4
Result = 12
Enter choice:
1 - volume of sphere
2 - volume of cylinder
3 - volume of cuboid
-1 to exit
3
Enter the l, b and h of cuboid :
1 2 3
Result = 6
Enter choice:
1 - volume of sphere
2 - volume of cylinder
3 - volume of cuboid
-1 to exit
-1
Exit
PS D:\KIIT_NOTES\2nd year sem_3\OOP_lab\26_8_2021>
```

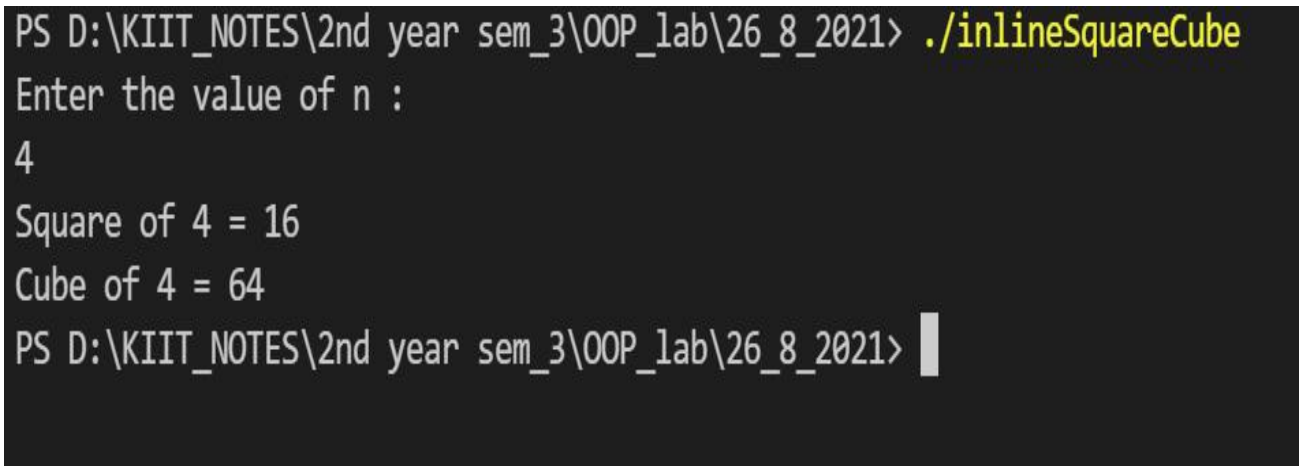
Question 2 :WAP which displays a given character ,n number of times ,using a function .When the n value is not provided ,it should print the character 80 times .When both the character and n values is not provided,it should print '*' character 80 times.[use function overloading and default arguments]

```
#include <iostream>
using namespace std;
class ch
{
public:
   void display(char c = '*', int n = 80);
};
void ch::display(char c, int n)
{
   for (int i = 1; i <= n; ++i)
   {
      cout << c << " ";
      if (i % 7 == 0)
         cout << endl;
   }
   cout << endl;
}
int main()
{
   char cha;
   int num;
   ch obj;
   int n;
   cout << "Printing 80 times using default argument with default value of n and ch:" << endl;
   obj.display();

   cout << "Enter the character :";
   cin >> cha;
   cout << "Printing using function overloading with default value of n :" << endl;
   obj.display(cha);

   cout << "Enter the value of n :";
   cin >> n;
   cout << "Enter the character :";
   cin >> cha;
   cout << "Printing using function overloading :" << endl;
   obj.display(cha, n);
   return 0;
}
```

```
PS D:\KIIT_NOTES\2nd year sem_3\OOP_lab\26_8_2021> ./printChar
Printing 80 times using default argument with default value of n and ch:
* * * * * * *
* * * * * * *
* * * * * * *
* * * * * * *
* * * * * * *
* * * * * * *
* * * * * * *
* * * * * * *
* * * * * * *
* * * * * * *
* * * * * * *
* * *
Enter the character :A
Printing using function overloading with default value of n :
A A A A A A A
A A A A A A A
A A A A A A A
A A A A A A A
A A A A A A A
A A A A A A A
A A A A A A A
A A A A A A A
A A A A A A A
A A A A A A A
A A A A A A A
A A A
Enter the value of n :10
Enter the character :#
Printing using function overloading :
# # # # # # #
# # #
PS D:\KIIT_NOTES\2nd year sem_3\OOP_lab\26_8_2021>
```

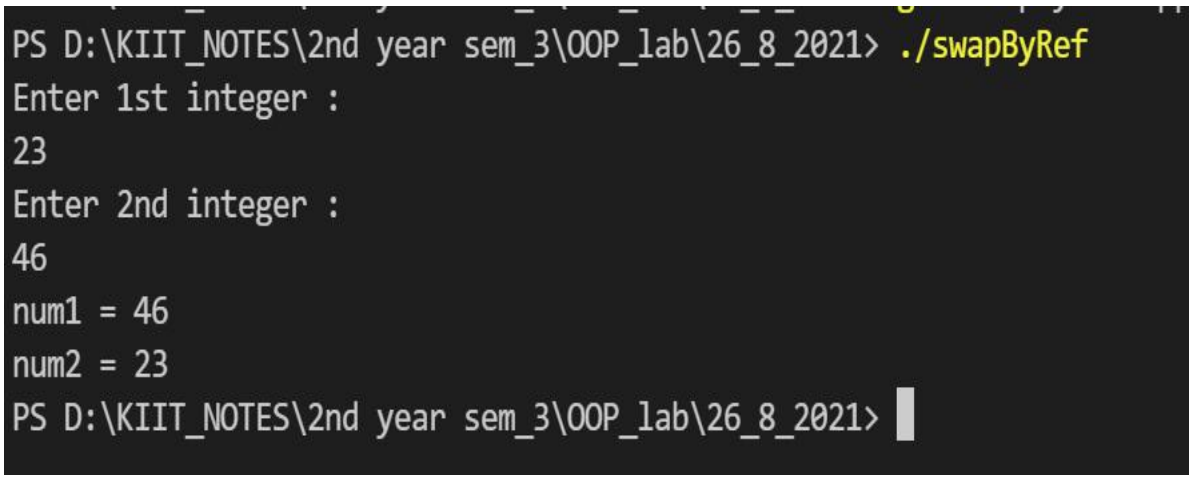
Question 3 :WAP to find square and cube of a number using inline function.

```
#include <iostream>
using namespace std;
class cal
{
public:
   inline int square(int n);
   inline int cube(int n);
};
int cal::square(int n)
{
   return n * n;
}
int cal::cube(int n)
{
   return n * n * n;
}
int main()
{
   int n;
   cout << "Enter the value of n :" << endl;
   cin >> n;
   cal obj;
   cout << "Square of " << n << " = " << obj.square(n) << endl;
   cout << "Cube of " << n << " = " << obj.cube(n) << endl;
   return 0;
}
```



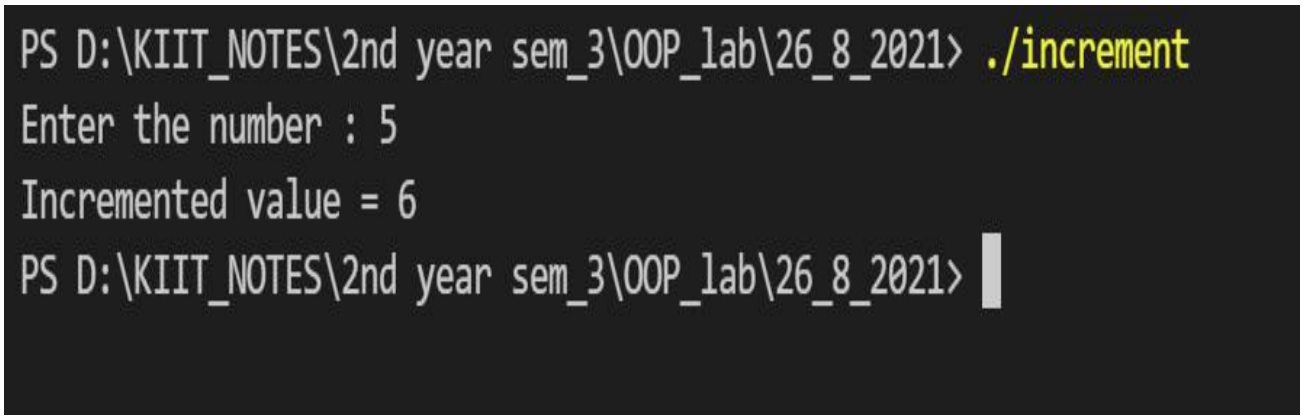
Question 4 :WAP to swap two integers using pass by reference.

```
#include <iostream>
using namespace std;
void swap(int *num1, int *num2);
int main()
{
   int num1, num2;
   cout << "Enter 1st integer :" << endl;
   cin >> num1;
   cout << "Enter 2nd integer :" << endl;
   cin >> num2;
   swap(&num1, &num2);
   cout << "num1 = " << num1 << endl;
   cout << "num2 = " << num2 << endl;
   return 0;
}
void swap(int *num1, int *num2)
{
   int temp;
   temp = *num1;
   *num1 = *num2;
   *num2 = temp;
}
```



Question 5 :WAP to increment the value of an argument given to a function.

```
#include <iostream>
using namespace std;

class value
{
public:
   int fun(int n);
};

int value::fun(int n){
   return ++n;
}

int main()
{
   value obj;
   int n;
   cout << "Enter the number : ";
   cin >> n;
   cout << "Incremented value = " << obj.fun(n) << endl;
   return 0;
}
```



Question 6 : Create a class distance which stores a distance in feet and inches. Input 2 distance values in objects , add them,store the resultant distance in the object and display it. [write the above program in two ways.

- ***a) store the resultant distance in the calling object : c3.add(c1,c2)***
- ***b) Return resultant object c3 = c1.add(c2)***

```
#include <iostream>
using namespace std;
class Distance
{
   int dFeet;
   int dInch;

public:
   void input()
   {
      cout << "enter distance in feet :" << endl;
      cin >> dFeet;
      cout << "enter distance in inch :" << endl;
      cin >> dInch;
   }
   Distance calculate(Distance c2)
   {
      Distance obj;
      obj.dFeet = dFeet + c2.dFeet;
      obj.dInch = dInch + c2.dInch;
      if (dInch >= 12)
      {
         obj.dInch = obj.dInch - 12;
         obj.dFeet++;
      }
      return obj;
   }
   void add(Distance c1, Distance c2)
   {
      dFeet = c1.dFeet + c2.dFeet;
      dInch = c1.dInch + c2.dInch;
      if (dInch >= 12)
      {
         dInch = dInch - 12;
         dFeet++;
      }
      cout << "using c3.add(c1,c2) :" << endl;
      cout << "distance in feet :" << dFeet << endl;
      cout << "enter distance in inch :" << dInch << endl;
   }
   void display()
   {
      cout << "using c3= c1.calculate(c2) :" << endl;
      cout << "distance in feet :" << dFeet << endl;
      cout << "enter distance in inch :" << dInch << endl;
   }
```

```
};
int main()
{
   Distance c1, c2, c3;
   c1.input();
   c2.input();
   c3 = c1.calculate(c2);
   c3.add(c1, c2);
   c3.display();
}
```

```
PS D:\KIIT_NOTES\2nd year sem_3\OOP_lab\26_8_2021> ./d
enter distance in feet :
1
enter distance in inch :
12
enter distance in feet :
2
enter distance in inch :
4
using c3.add(c1,c2) :
distance in feet :4
enter distance in inch :4
using c3= c1.calculate(c2) :
distance in feet :4
enter distance in inch :4
PS D:\KIIT_NOTES\2nd year sem_3\OOP_lab\26_8_2021>
```

Question 7 : WAP to create a class LIFE with data member : manufacturing year , expire year , year to calculate life of the product.Take an input function to initialize the data members manufacturing year and expire year using a function calculate life of the product through

1) pass by value
2) pass by address
3) pass by reference

```
#include <iostream>
using namespace std;

class life
{
public:
   void inputVal(int mYear, int eYear);
   void inputAdd(int *mYear, int *eYear);
   void inputRef(int &manuYear, int &expYear);

   void Valecalculate();

private:
   int manufacturingYear;
   int expiryYear;
   int year;
};
void life::inputVal(int mYear, int eYear)
{
   manufacturingYear = mYear;
   expiryYear = eYear;
}
void life::inputAdd(int *mYear, int *eYear)
{
   manufacturingYear = *mYear;
   expiryYear = *eYear;
}
void life::inputRef(int &manuYear, int &expYear)
{
   manufacturingYear = manuYear;
   expiryYear = expYear;
}
void life::Valecalculate()
{
   year =  expiryYear - manufacturingYear ;
   cout << "Life of machine = " << year << endl;
}

int main()
{
   life obj;
   int mYear, eYear;
   cout << "Enter year of manufacturing :";
   cin >> mYear;
   cout << "Enter year of expiry :";
   cin >> eYear;
```

```
    obj.inputVal(mYear, eYear);
    cout << "Call by value : " << endl;
    obj.Valecalculate();
    cout << "Call by Address : " << endl;
    obj.inputAdd(&mYear, &eYear);
    obj.Valecalculate();
    cout << "Call by Reference : " << endl;
    obj.inputVal(mYear, eYear);
    obj.Valecalculate();

    return 0;
}
```

```
PS D:\KIIT_NOTES\2nd year sem_3\OOP_lab\26_8_2021> ./ProductLifetime
Enter year of manufacturing :2000
Enter year of expiry :2020
Call by value :
Life of machine = 20
Call by Address :
Life of machine = 20
Call by Reference :
Life of machine = 20
PS D:\KIIT_NOTES\2nd year sem_3\OOP_lab\26_8_2021>
```