



OBJECT ORIENTED PROGRAMMING

LAB 2

ASSIGNMENT

NAME: S.M.IRTIZA

ROLL NO.: 22K-4638

CLASS: 2-F

QUESTION # 01:

Write a C++ program to calculate area and perimeter of square and rectangle using function.

CODE:

```
//NAME: S.M.IRTIZA ROLL NO.: 22K-4638
#include<iostream>
using namespace std;
int area_square(int a) {
    return a * a;
}
int perimeter_square(int a) {
    return 4 * a;
}
int area_rectangle(int b, int c) {
    return b * c;
}
int perimeter_rectangle(int b, int c) {
    return((2 * b) + (2 * c));
}
int main() {
    int a, area, perimeter, b, c;
    cout<<"NAME: S.M.IRTIZA | ROLL NO.: 22K-4638"<<endl;
    cout << "enter the length of square: " << endl;
    cin >> a;
    area = area_square(a);
    cout << "area of square: " << area << endl;
    perimeter = perimeter_square(a);
    cout << "perimeter of square: " << perimeter << endl;
    cout << "enter the length and breadth of rectangle: " << endl;
    cin >> b >> c;
    area = area_rectangle(b, c);
    cout << "area of rectangle: " << area << endl;
    perimeter = perimeter_rectangle(b, c);
    cout << "perimeter of square: " << perimeter << endl;
    return 0;
}
```

OUTPUT:

```
NAME: S.M.IRTIZA | ROLL NO.: 22K-4638
enter the length of square:
4
area of square: 16
perimeter of square: 16
enter the length and breadth of rectangle:
12 2
area of rectangle: 24
perimeter of square: 28
```

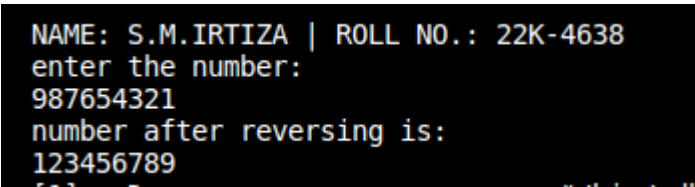
QUESTION # 02:

Create a function to reverse a number.

CODE:

```
//NAME: S.M.IRTIZA ROLL NO.: 22K-4638
#include<iostream>
using namespace std;
void reverse(int num) {
if (num < 10) {
cout << num;
}
else {
cout << num % 10;
reverse(num / 10);
}
}
int main() {
cout<<"NAME: S.M.IRTIZA | ROLL NO.: 22K-4638"<<endl;
int num;
cout<<"enter the number: "<<endl;
cin >> num;
cout<<"number after reversing is: "<<endl;
reverse(num);
cout<<endl;
return 0;
}
```

OUTPUT:

A screenshot of a terminal window with a black background and white text. The output shows the program's execution: it prints the user's name and roll number, prompts for a number, receives the input '987654321', and then prints the reversed number '123456789'.

```
NAME: S.M.IRTIZA | ROLL NO.: 22K-4638
enter the number:
987654321
number after reversing is:
123456789
```

QUESTION # 03:

Write Program to find the Factorial of a Number Using Recursion.

CODE:

```
//NAME: S.M.IRTIZA ROLL NO.: 22K-4638
#include<iostream>
using namespace std;
long long int rec(int);
int main() {
    cout<<"NAME: S.M.IRTIZA | ROLL NO.: 22K-4638"<<endl;
    int num;
    long long int x;
    cout<<"enter the number: "<<endl;
    cin >> num;
    x = rec(num);
    cout<<"factorial is: "<<endl;
    cout << x<<endl;
    return 0;
}
long long int rec(int n) {
    if (n == 0) {
        return 1;
    }
    else {
        return n * rec(n - 1);
    }
}
```

OUTPUT:

```
NAME: S.M.IRTIZA | ROLL NO.: 22K-4638
enter the number:
6
factorial is:
720
```

QUESTION # 04

Program to Store Information of Students Using Structure

CODE:

```
//NAME: S.M.IRTIZA ROLL NO.: 22K-4638
#include<iostream>
#include<string.h>
using namespace std;
struct student {
char name[50];
char rollno[15];
float marks;
};
int main() {
int n,i;
cout<<"NAME: S.M.IRTIZA | ROLL NO.: 22K-4638"<<endl;
cout<<"enter the number of student: "<<endl;
cin>>n;
struct student s[n];
for(i=0;i<n;i++){
cout << "enter the name of student " <<i+1<< endl;
cin >> s[i].name;
cout << "enter the rollno of student " <<i+1<< endl;
cin >> s[i].rollno;
cout << "enter the marks of student " <<i+1<< endl;
cin >> s[i].marks;
}
for(i=0;i<n;i++){
cout << "name of student " <<i+1<<": "<< s[i].name << endl;
cout << "rollno of student " <<i+1<<": "<< s[i].rollno << endl;
cout << "marks of student " <<i+1<<": "<< s[i].marks << endl;
}
return 0;
}
```

OUTPUT:

```
NAME: S.M.IRTIZA | ROLL NO.: 22K-4638
enter the number of student:
3
enter the name of student 1
subhan
enter the rollno of student 1
22k-1234
enter the marks of student 1
66
enter the name of student 2
ahmed
enter the rollno of student 2
22k-1111
enter the marks of student 2
88
enter the name of student 3
irtiza
enter the rollno of student 3
22k-1231
enter the marks of student 3
99
name of student 1: subhan
rollno of student 1: 22k-1234
marks of student 1: 66
name of student 2: ahmed
rollno of student 2: 22k-1111
marks of student 2: 88
name of student 3: irtiza
rollno of student 3: 22k-1231
marks of student 3: 99
```

QUESTION #05

Write a program to check whether the input year is a leap year using function.

CODE:

```
//NAME: S.M.IRTIZA ROLL NO.: 22K-4638
#include<iostream>
using namespace std;
void leap(int year) {
if (year % 4 == 0) {
if (year % 100 != 0) {
cout << year << " is a leap year" << endl;
}
else {
cout << year << " is not a leap year" << endl;
}
}
else {
cout << year << " is not a leap year" << endl;
}
}
int main() {
int year;
cout<<"NAME: S.M.IRTIZA | ROLL NO.: 22K-4638"<<endl;
cout << "enter the year" << endl;
cin >> year;
leap(year);
return 0;
}
```

OUTPUT:

```
NAME: S.M.IRTIZA | ROLL NO.: 22K-4638
enter the year
1990
1990 is not a leap year
```

QUESTION #06

Create a Function that takes two variables and swaps the elements between the variables.

CODE:

```
//NAME: S.M.IRTIZA ROLL NO.: 22K-4638
#include<iostream>
using namespace std;
void swap(int a, int b) {
    int temp;
    temp = a;
    a = b;
    b = temp;
    cout << "a=" << a << " b=" << b << endl;
}
int main() {
    cout<<"NAME: S.M.IRTIZA | ROLL NO.: 22K-4638"<<endl;
    int a, b;
    cout << "enter two number: " << endl;
    cout << "a: ";
    cin >> a;
    cout << "b: ";
    cin >> b;
    swap(a, b);
    return 0;
}
```

OUTPUT:

```
NAME: S.M.IRTIZA | ROLL NO.: 22K-4638
enter two number:
a: 5
b: 6
a=6 b=5
```


QUESTION #07

Let us work on the restaurant management system. Create a structure which shows following information:

- Menu , let's say you can add few items such as Pizza, rice, tea, bread and display their prices as well.
- The customer selects any item and then the program calculates its total amount and display it to the customer.

CODE:

```
//NAME: S.M.IRTIZA ROLL NO.: 22K-4638
```

```
#include<iostream>
using namespace std;
struct resturant{
int pizza=0;
int rice=0;
int tea=0;
int bread=0;

};

int calculate(struct resturant r){
return ((200*r.pizza)+(100*r.rice)+(50*r.tea)+(50*r.bread));
}

int main(){
struct resturant r;
cout<<"NAME: S.M.IRTIZA | ROLL NO.: 22K-4638"<<endl;
cout<<"MENU: "<<endl;
cout<<"1-PIZZA=200\n2-RICE=100\n3-TEA=50\n4-BREAD=50"<<endl;
int ans, i=0,n;
cout<<"enter the number of item you want to buy: "<<endl;
cin>>n;
do{
cout<<"select the item "<<i+1<<endl;
cin>>ans;
switch(ans)
{
case 1:
cout<<"enter the quantity: "<<endl;
cin>>r.pizza;
break;
case 2:
cout<<"enter the quantity: "<<endl;
```

```

cin>>r.rice;
break;
case 3:
cout<<"enter the quantity: "<<endl;
cin>>r.tea;
break;
case 4:
cout<<"enter the quantity: "<<endl;
cin>>r.bread;
break;
default:
cout<<"please enter the right option"<<endl;
break;
}
i++;
}while(i!=n);
int amount;
amount= calculate(r);
cout<<"total bill is of "<<amount<<endl;
return 0;
}

```

OUTPUT:

```

NAME: S.M.IRTIZA | ROLL NO.: 22K-4638
MENU:
1-PIZZA=200
2-RICE=100
3-TEA=50
4-BREAD=50
enter the number of item you want to buy:
4
select the item 1
1
enter the quantity:

4
select the item 2
3
enter the quantity:
4
select the item 3
2
enter the quantity:
4
select the item 4
4
enter the quantity:
4
total bill is of 1600

```