

## Programming 2

### Assignment 2

**Q1: Using functions, write a C++ program to calculate car parking charge based on number of hours that the car is parked such that:**

- 2.00 SAR/hour if hours $\leq$ 3.
- If hours (more than 3 but less the 24) then for each extra hour 1 SAR for more than 3 hours.
- if number of hours is 24 then 75 SAR.

**Code :**

```
#include <iostream>
using namespace std;
void getPriceOfParking(int n){
double total;
    if(n<=3)
    {
        total = 2.00*n;
    }
    else if((n>3)&&(n<24))
    {
        total=2*3;
        n=n-3;
        total = total+(n*1);}
    else{
        total = 75;
    }
    cout<<"the total of price is "<<total<<endl;

}

int main() {
    int n;
    cout<<"please Enter the number of hour the car park : "<<endl;
    cin>>n;
    getPriceOfParking(n);
    return 0;
}
```

## Output :

```
1 #include <iostream>
2
3 using namespace std;
4 void getPriceOfParking(int n){
5     double total;
6     if(n<=3)
7     {
8         total = 2.00*n;
9     }
10    else if((n>3)&&(n<24))
11    {
12        total=2*3;
13        n=n-3;
14        total = total+(n*1);
15    }
16    else{
17        total = 75;
18    }
19    cout<<"the total of price is "<<total<<endl;
20 }
21
22 int main() {
23     int n;
24     cout<<"please Enter the number of hour the car park : "<<endl;
25     cin>>n;
26     getPriceOfParking(n);
27     return 0;
28 }
```

```
please Enter the number of hour the car park :
3
the total of price is 6
-----
Process exited after 3.623 seconds with return value 0
Press any key to continue . . .
```

```
1 #include <iostream>
2
3 using namespace std;
4 void getPriceOfParking(int n){
5     double total;
6     if(n<=3)
7     {
8         total = 2.00*n;
9     }
10    else if((n>3)&&(n<24))
11    {
12        total=2*3;
13        n=n-3;
14        total = total+(n*1);
15    }
16    else{
17        total = 75;
18    }
19    cout<<"the total of price is "<<total<<endl;
20 }
21
22 int main() {
23     int n;
24     cout<<"please Enter the number of hour the car park : "<<endl;
25     cin>>n;
26     getPriceOfParking(n);
27     return 0;
28 }
```

```
please Enter the number of hour the car park :
20
the total of price is 23
-----
Process exited after 1.218 seconds with return value 0
Press any key to continue . . .
```

```
1 #include <iostream>
2
3 using namespace std;
4 void getPriceOfParking(int n){
5     double total;
6     if(n<=3)
7     {
8         total = 2.00*n;
9     }
10    else if((n>3)&&(n<24))
11    {
12        total=2*3;
13        n=n-3;
14        total = total+(n*1);
15    }
16    else{
17        total = 75;
18    }
19    cout<<"the total of price is "<<total<<endl;
20 }
21
22 int main() {
23     int n;
24     cout<<"please Enter the number of hour the car park : "<<endl;
25     cin>>n;
26     getPriceOfParking(n);
27     return 0;
28 }
```

```
please Enter the number of hour the car park :
30
the total of price is 75
-----
Process exited after 2.328 seconds with return value 0
Press any key to continue . . .
```

**Q2: Using functions, write a C++ program to calculate Gas/Benzine amount based on number of liters such that:**

- Octane 95 gasoline to SR2.18
- Octane 91 to SR1.53

**Code :**

```
#include <iostream>
using namespace std;
void total95(int n) {
    double total=0;
    total=n*2.18;
    cout<<"the total is "<<total<<endl;
}
void total91(int n) {
    double total=0;
    total=n*1.53;
    cout<<"the total is "<<total<<endl;}
int main() {
    int n,n1;
    cout<<"enter the number of leters of Octane 95 "<<endl;
    cin>>n;
    total95(n);
    cout<<"enter the number of leters of Octane 91"<<endl;
    cin>>n1;
    total95(n1);}
```

**Output :**

```
1  #include <iostream>
2  using namespace std;
3
4  void total95(int n) {
5
6
7      double total=0;
8      total=n*2.18;
9      cout<<"the total is "<<total<<endl;
10
11  }
12
13 void total91(int n) {
14
15
16     double total=0;
17     total=n*1.53;
18     cout<<"the total is "<<total<<endl;
19
20 }
21
22
23 int main() {
24     int n,n1;
25     cout<<"enter the number of leters of Octane 95 "<<endl;
26     cin>>n;
27     total95(n);
28     cout<<"enter the number of leters of Octane 91"<<endl;
29
30     cin>>n1;
31     total95(n1);
32
33
34
35 }
36
37
```

```
enter the number of leters of Octane 95
14
the total is 30.52
enter the number of leters of Octane 91
12
the total is 26.16
-----
Process exited after 5.235 seconds with return value 0
Press any key to continue . . .
```

**Q3: Using functions, write a C++ program to calculate the factorial of an integer number using the following formula:**

$$n! = 1 \times 2 \times 3 \times \dots \times (n-1) \times n$$

### Code :

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

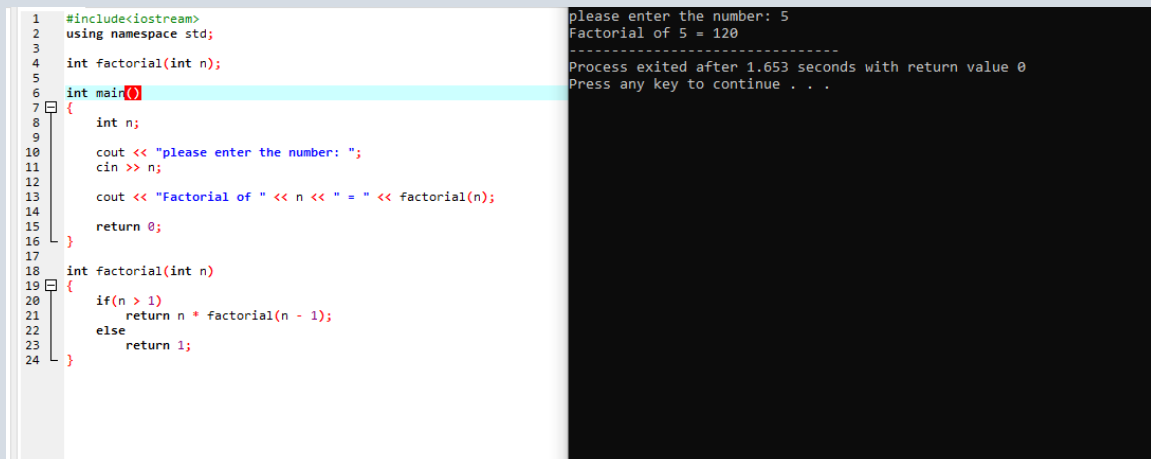
int factorial(int n);

int main()
{
    int n;
    cout << "please enter the number: ";
    cin >> n;
    cout << "Factorial of " << n << " = " << factorial(n);

    return 0;
}

int factorial(int n)
{
    if(n > 1)
        return n * factorial(n - 1);
    else
        return 1;
}
```

### output :



```
1 #include<iostream>
2 using namespace std;
3
4 int factorial(int n);
5
6 int main()
7 {
8     int n;
9
10    cout << "please enter the number: ";
11    cin >> n;
12
13    cout << "Factorial of " << n << " = " << factorial(n);
14
15    return 0;
16 }
17
18 int factorial(int n)
19 {
20     if(n > 1)
21         return n * factorial(n - 1);
22     else
23         return 1;
24 }
```

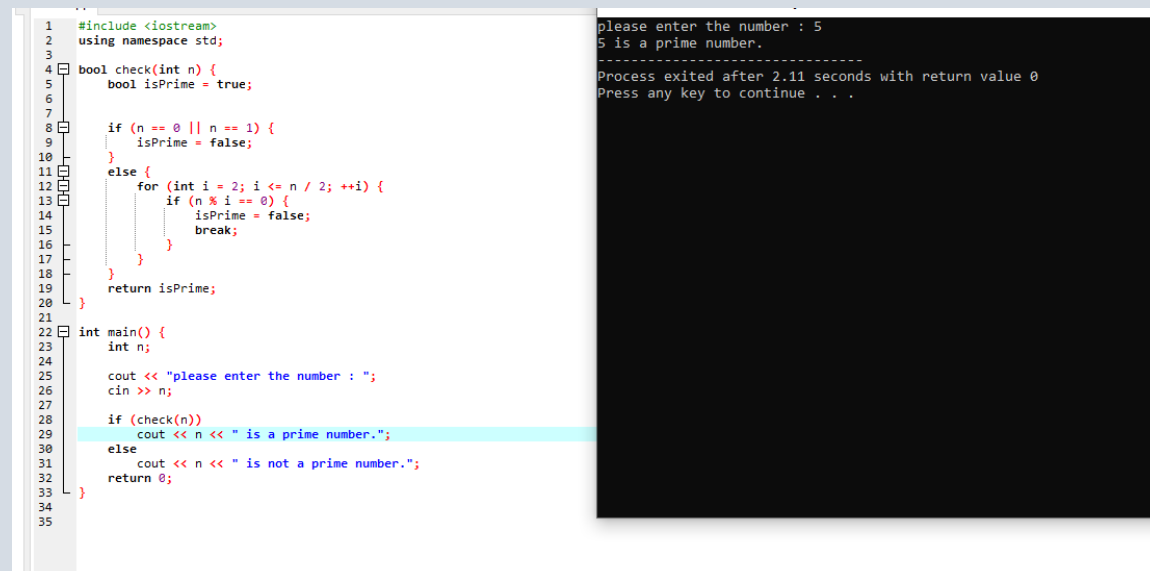
```
please enter the number: 5
Factorial of 5 = 120
-----
Process exited after 1.653 seconds with return value 0
Press any key to continue . . .
```

**Q4: Using functions, write a C++ program to determine if the number is Prime.**

**Code :**

```
#include <iostream>
using namespace std;
bool check(int n) {
    bool isPrime = true;
    if (n == 0 || n == 1) {
        isPrime = false;
    }
    else {
        for (int i = 2; i <= n / 2; ++i) {
            if (n % i == 0) {
                isPrime = false;
                break;
            }
        }
    }
    return isPrime;
}
int main() {
    int n;
    cout << "please enter the number : ";
    cin >> n;
    if (check(n))
        cout << n << " is a prime number.";
    else
        cout << n << " is not a prime number.";
    return 0;
}
```

**Output :**



```
1 #include <iostream>
2 using namespace std;
3
4 bool check(int n) {
5     bool isPrime = true;
6
7     if (n == 0 || n == 1) {
8         isPrime = false;
9     }
10    else {
11        for (int i = 2; i <= n / 2; ++i) {
12            if (n % i == 0) {
13                isPrime = false;
14                break;
15            }
16        }
17    }
18    return isPrime;
19 }
20
21 int main() {
22     int n;
23     cout << "please enter the number : ";
24     cin >> n;
25     if (check(n))
26         cout << n << " is a prime number.";
27     else
28         cout << n << " is not a prime number.";
29     return 0;
30 }
31
32
33
34
35
```

```
please enter the number : 5
5 is a prime number.
-----
Process exited after 2.11 seconds with return value 0
Press any key to continue . . .
```