# RAJALAKSHMI ENGINEERING COLLEGE RAJALAKSHMI NAGAR, THANDALAM – 602 105



# CS23331 DESIGN AND ANALYSIS OF ALGORITHM LAB

# **Laboratory Observation Notebook**

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Year / Branch / Section : 2 <sup>nd</sup> Year / AIML / B
Register No. :
Semester : 3 <sup>rd</sup> Semester
Academic Year : 2024-2025

# WEEK 01 BASIC C PROGRAMMING

1)Given two numbers, write a C program to swap the given numbers.

# For example:

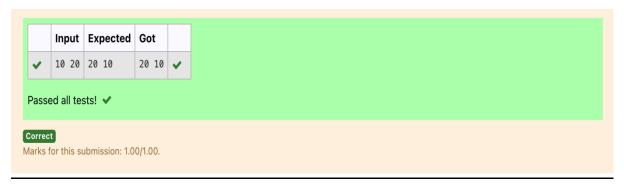
iliput Result	Input	Result
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Input	Result
10 20	20 10

### **CODE:**

```
#include<stdio.h>
int main()
{
   int a,b,temp;
   scanf("%d %d",&a,&b);
   temp=a;
   a=b;
   b=temp;
   printf("%d %d",a,b);
}
```

### **OUTPUT:**



2) Write a C program to find the eligibility of admission for a professional course based on the following criteria:

Marks in Maths >= 65

```
Marks in Physics >= 55
Marks in Chemistry >= 50
Or
Total in all three subjects >= 180
Sample Test Cases
Test Case 1
Input
70 60 80
Output
The candidate is eligible
Test Case 2
Input
50 60 40
Output
The candidate is not eligible
CODE:
#include<stdio.h>
int main()
{
  int m,p,c,t;
  scanf("%d %d %d",&m,&p,&c);
```

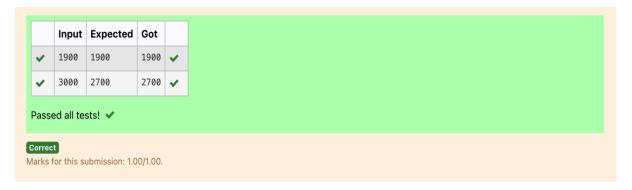
```
t=m+p+c;
if(t>=180 ||(m>=65 && p>=55 && c>=50))
{
    printf("The candidate is eligible");
}
else
{
    printf("The candidate is not eligible");
}
```



3) Malini goes to BestSave hyper market to buy grocery items. BestSave hyper market provides 10% discount on the bill amount B when ever the bill amount B is more than Rs.2000.

The bill amount B is passed as the input to the program. The program must print the final amount A payable by Malini.
Input_Format: The first line denotes the value of B.
Output_Format: The first line contains the value of the final payable amount A.
Example1:
Input:
1900
Output:
1900 Example2:
Input:
3000
Output:
2700
CODE:
#include <stdio.h></stdio.h>
int main()

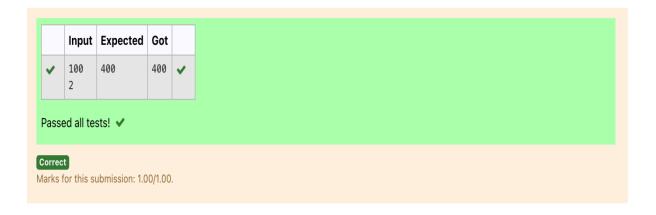
```
{
  int b,d;
  scanf("%d",&b);
  if(b>2000)
  {
     d=b*0.1;
     b=b-d;
     printf("%d",b);
  }
  else
  {
     printf("%d",b);
  }
}
```



4) Baba is very kind to beggars and every day Baba donates half of the amount he has when ever a beggar requests him. The money M left in Baba's hand is passed as the input and the number of beggars B who received the alms are passed as the input. The

program must print the money Baba had in the beginning of the day.
Input_Format:
The first line denotes the value of A. The second line denotes the value of B.
Output_Format:
The first line denotes the value of money with Baba in the beginning of the day.
Example:
Input:
100 2
Output:
400
Explanation:
Baba donated to two beggars. So when he encountered second beggar he had $100*2 = Rs.200$ and when he encountered 1st he had $200*2 = Rs.400$ .
CODE:

```
#include<stdio.h>
int main()
{
    int i,m,b;
    scanf("%d %d",&m,&b);
    for(i=0;i<b;i++)
    {
        m=m*b;
    }
    printf("%d",m);
}</pre>
```



5) The CEO of company ABC Inc wanted to encourage the employees coming on time to the office. So he announced that for every consecutive day an employee comes on time in a week

(starting from Monday to Saturday), he will be awarded Rs.200 more than the previous day as "Punctuality Incentive". The incentive I for the starting day (ie on Monday) is passed as the input to the program. The number of days N an employee came on time consecutively starting from Monday is also passed as the input. The program must calculate and print the "Punctuality Incentive" P of the employee.

### Input\_Format:

The first line denotes the value of I.

The second line denotes the value of N.

#### Output\_Format:

The first line denotes the value of P.

**Example:** 

Input:

500

3

**Output:** 

2100

### **Explanation:**

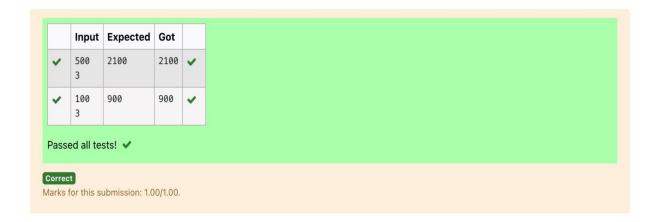
On Monday the employee receives Rs.500, on Tuesday Rs.700, on WednesdayRs.900

**So total = Rs.2100** 

CODE:

#include<stdio.h>

```
int main()
{
    int i,I,N,total;
    scanf("%d %d",&I,&N);
    for(i=0;i<N;i++)
    {
        total+=I;
        I=I+200;
    }
    printf("%d",total);
}</pre>
```



6) Two numbers M and N are passed as the input. A number X is also passed as the input. The program must print the numbers divisible by X from N to M (inclusive of M and N).

### **Input Format:**

The first line denotes the value of M
The second line denotes the value of N
The third line denotes the value of X

#### **Output Format:**

Numbers divisible by X from N to M, with each number separated by a space.

### **Boundary Conditions:**

1 <= M <= 9999999

M < N <= 9999999

1 <= X <= 9999

### **Example Input/Output 1:**

Input:

2

40

7

### **Output:**

35 28 21 14 7

### **Example Input/Output 2:**

Input:

66

121

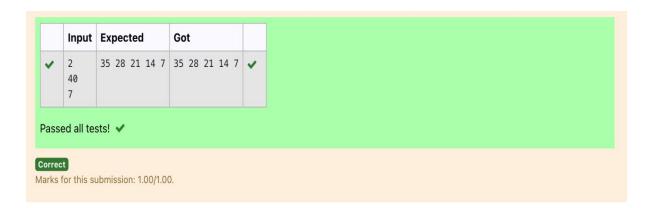
11

#### **Output:**

121 110 99 88 77 66

### **CODE:**

```
#include<stdio.h>
int main()
{
    int m,n,x,i;
    scanf("%d %d %d",&m,&n,&x);
    for(i=n;i>=m;i--)
    {
        if(i%x==0)
        {
            printf("%d ",i);
        }
    }
}
```



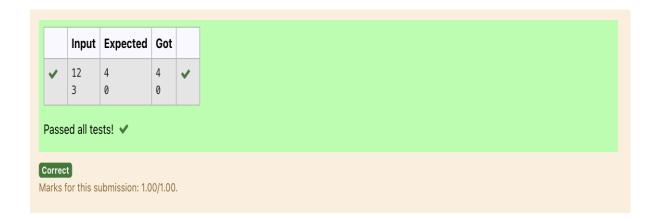
# 7) Write a C program to find the quotient and reminder of given integers.

# For example:

Input	Result
12	4
3	0

### **CODE:**

```
#include<stdio.h>
int main()
{
    int n,d,q,r;
    scanf("%d %d",&n,&d);
    r=n%d;
    q=n/d;
    printf("%d\n",q);
    printf("%d",r);
}
```



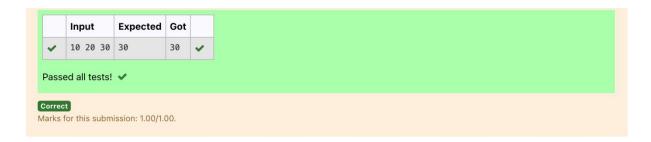
# 8) Write a C program to find the biggest among the given 3 integers?

# For example:

Input	Result
10 20 30	30

### **CODE:**

```
int main()
{
    int a,b,c,result;
    scanf("%d %d %d",&a,&b,&c);
    if(a>b && a>c)
    {
       result=a;
    }
    else if(b>c)
    {
       result=b;
    }
    else
    {
       result=c;
    }
    printf("%d",result);
}
```



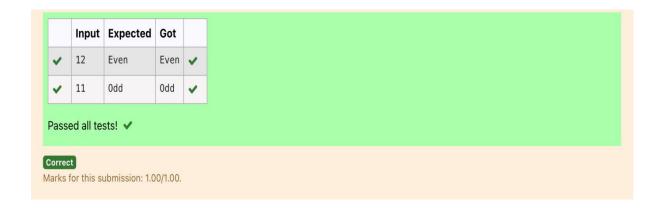
# 9) Write a C program to find whether the given integer is odd or even?

# For example:

Input	Result
12	Even
11	Odd

### **CODE:**

```
#include<stdio.h>
int main()
{
    int n;
    scanf("%d",&n);
    if(n%2==0)
        printf("Even");
    else
        printf("Odd");
}
```



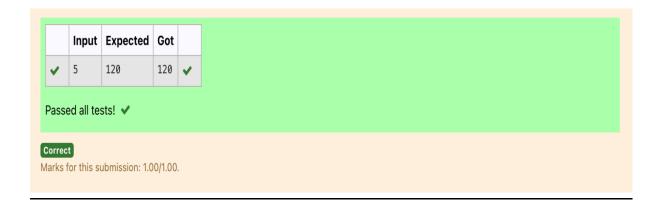
# 10) Write a C program to find the factorial of given n.

# For example:

Input	Result
5	120

# **CODE:**

```
#include<stdio.h>
int main()
{
   int a,i,fact=1;
   scanf("%d",&a);
   for(i=a;i>=1;i--)
      fact*=i;
   printf("%d",fact);
}
```



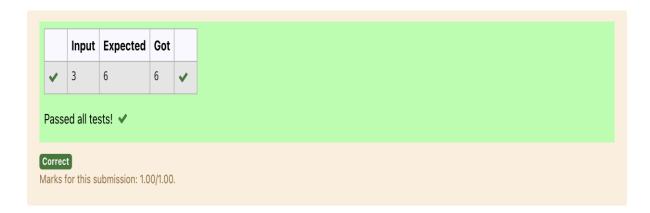
# 11) Write a C program to find the sum first N natural numbers.

# For example:

Input	Result
3	6

### **CODE:**

```
#include<stdio.h>
int main()
{
   int n,i,sum;
   scanf("%d",&n);
   for(i=1;i<=n;i++)
      sum+=i;
   printf("%d",sum);
}</pre>
```



# 12) Write a C program to find the Nth term in the fibonacci series.

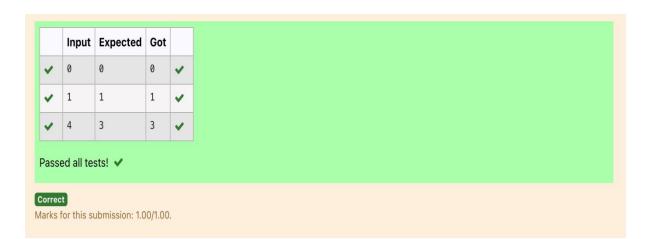
# For example:

Input	Result
0	0
1	1
4	3

### **CODE:**

```
#include<stdio.h>
int main()
  int n,c,a=1,b=1,i;
  scanf("%d",&n);
  if(n==0)
    printf("0");
  if (n==1 || n==2)
    printf("1");
  if(n>=3)
    for(i=3; i<=n;i++)
      c=a+b;
      a=b;
      b=c;
    printf("%d",c);
```

```
}
```



# 13) Write a C program to find the power of integers.

input: a b

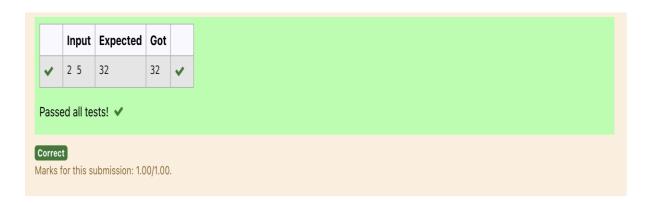
output: a^b value

### For example:

Input	Result
2 5	32

# **CODE:**

```
#include<stdio.h>
#include<math.h>
int main()
{
   int a,p,r;
   scanf("%d %d",&a,&p);
   r=pow(a,p);
   printf("%d",r);
}
```



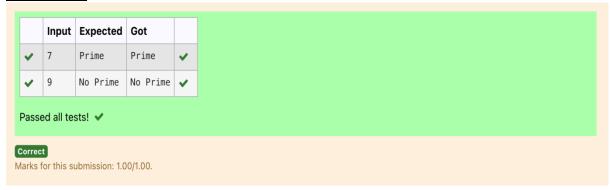
# 14) Write a C program to find Whether the given integer is prime or not.

# For example:

Input	Result
7	Prime
9	No Prime

### **CODE:**

```
#include<stdio.h>
int main()
{
    int a,i,count=0;
    scanf("%d",&a);
    for(i=2;i<a;i++)
    {
        if(a%i==0)
            count++;
    }
    if(count==0)
        printf("Prime");
    else
        printf("No Prime");
}
```



# 15) Write a C program to find the reverse of the given integer?

# **CODE:**

```
#include<stdio.h>
int main()
{
    int sum=0,n,a,r;
    scanf("%d",&a);
    n=a;
    while(n!=0)
    {
        r=n%10;
        sum=(sum*10)+r;
        n=n/10;
    }
    printf("%d",sum);
}
```

