

# RAJALAKSHMI ENGINEERING COLLEGE

RAJALAKSHMI NAGAR, THANDALAM – 602 105



**RAJALAKSHMI**  
ENGINEERING COLLEGE

**CS23331**

**DESIGN AND ANALYSIS OF ALGORITHM LAB**

**Laboratory Observation Note Book**

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Year / Branch / Section : 2<sup>nd</sup> Year/ AIML / A .....

Register No. : 231501087 .....

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:

| 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:

|   | Input | Expected | Got   |   |
|---|-------|----------|-------|---|
| ✓ | 10 20 | 20 10    | 20 10 | ✓ |

Passed all tests! ✓

Correct

Marks for this submission: 1.00/1.00.

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

**Marks in Maths  $\geq 65$**

**Marks in Physics  $\geq 55$**

**Marks in Chemistry  $\geq 50$**

**Or**

**Total in all three subjects  $\geq 180$**

**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");
    }
}

```

### **OUTPUT:**

|   | Input    | Expected                  | Got                       |   |
|---|----------|---------------------------|---------------------------|---|
| ✓ | 70 60 80 | The candidate is eligible | The candidate is eligible | ✓ |
| ✓ | 50 80 80 | The candidate is eligible | The candidate is eligible | ✓ |

Passed all tests! ✓

**Correct**

Marks for this submission: 1.00/1.00.

**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>

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);
    }
}
```

### OUTPUT:

|   | Input | Expected | Got  |   |
|---|-------|----------|------|---|
| ✓ | 1900  | 1900     | 1900 | ✓ |
| ✓ | 3000  | 2700     | 2700 | ✓ |

Passed all tests! ✓

Correct

Marks for this submission: 1.00/1.00.

**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  $100 * 2 = \text{Rs.}200$  and when he encountered 1st he had  $200 * 2 = \text{Rs.}400$ .**



### 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);
}
```

### OUTPUT:

|   | Input    | Expected | Got |   |
|---|----------|----------|-----|---|
| ✓ | 100<br>2 | 400      | 400 | ✓ |

Passed all tests! ✓

**Correct**

Marks for this submission: 1.00/1.00.

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 Wednesday Rs.900

So total = Rs.2100

**CODE:**

```
#include<stdio.h>
int main()
{
    int i,l,N,total;
    scanf("%d %d",&l,&N);
    for(i=0;i<N;i++)
    {
        total+=l;
        l=l+200;
    }
    printf("%d",total);
}
```

**OUTPUT:**

|   | Input    | Expected | Got  |   |
|---|----------|----------|------|---|
| ✓ | 500<br>3 | 2100     | 2100 | ✓ |
| ✓ | 100<br>3 | 900      | 900  | ✓ |

Passed all tests! ✓

**Correct**

Marks for this submission: 1.00/1.00.

**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:**

**$1 \leq M \leq 9999999$**

**$M < N \leq 9999999$**

**$1 \leq X \leq 9999$**

**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);
        }
    }
}
```

### OUTPUT:

|   | Input        | Expected      | Got           |   |
|---|--------------|---------------|---------------|---|
| ✓ | 2<br>40<br>7 | 35 28 21 14 7 | 35 28 21 14 7 | ✓ |

Passed all tests! ✓

**Correct**

Marks for this submission: 1.00/1.00.

7) Write a C program to find the quotient and remainder 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);
}
```

**OUTPUT:**

|   | Input | Expected | Got |   |
|---|-------|----------|-----|---|
| ✓ | 12    | 4        | 4   | ✓ |
|   | 3     | 0        | 0   |   |

Passed all tests! ✓

Correct

Marks for this submission: 1.00/1.00.

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);
}
```

**OUTPUT:**

|   | Input    | Expected | Got |   |
|---|----------|----------|-----|---|
| ✓ | 10 20 30 | 30       | 30  | ✓ |

Passed all tests! ✓

**Correct**

Marks for this submission: 1.00/1.00.

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");
}
```

**OUTPUT:**

|   | Input | Expected | Got  |   |
|---|-------|----------|------|---|
| ✓ | 12    | Even     | Even | ✓ |
| ✓ | 11    | Odd      | Odd  | ✓ |

Passed all tests! ✓

Correct

Marks for this submission: 1.00/1.00.



**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);
}
```

**OUTPUT:**

|   | Input | Expected | Got |   |
|---|-------|----------|-----|---|
| ✓ | 5     | 120      | 120 | ✓ |

Passed all tests! ✓

**Correct**

Marks for this submission: 1.00/1.00.

**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);
}
```

**OUTPUT:**

|   | Input | Expected | Got |   |
|---|-------|----------|-----|---|
| ✓ | 3     | 6        | 6   | ✓ |

Passed all tests! ✓

**Correct**

Marks for this submission: 1.00/1.00.

**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);
    }
}
```

```
}  
}
```

## OUTPUT:

|   | Input | Expected | Got |   |
|---|-------|----------|-----|---|
| ✓ | 0     | 0        | 0   | ✓ |
| ✓ | 1     | 1        | 1   | ✓ |
| ✓ | 4     | 3        | 3   | ✓ |

Passed all tests! ✓

**Correct**

Marks for this submission: 1.00/1.00.

**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);
}
```

**OUTPUT:**

|   | Input | Expected | Got |   |
|---|-------|----------|-----|---|
| ✓ | 2 5   | 32       | 32  | ✓ |

Passed all tests! ✓

**Correct**

Marks for this submission: 1.00/1.00.

**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");
}
```

**OUTPUT:**

|   | Input | Expected | Got      |   |
|---|-------|----------|----------|---|
| ✓ | 7     | Prime    | Prime    | ✓ |
| ✓ | 9     | No Prime | No Prime | ✓ |

Passed all tests! ✓

**Correct**

Marks for this submission: 1.00/1.00.

### 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);
}
```

#### OUTPUT:

|   | Input | Expected | Got |   |
|---|-------|----------|-----|---|
| ✓ | 123   | 321      | 321 | ✓ |

Passed all tests! ✓

**Correct**

Marks for this submission: 1.00/1.00.