Ex. No: 1 **Date: 12.08.24**

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Basic C Programming

1.a.

Aim: Given two numbers, write a C program to swap the given numbers.

Algorithm:

DECLARE a, b, temp as INTEGER

READ a

READ b

// Swap values of a and b

temp = a

a = b

b = temp

PRINT a, b

Program:

```
#include<stdio.h>

int main(){

int a;

int b;

int temp;


scanf("%d",&a);
```

```
scanf("%d",&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! ✔

1.b

Aim: Write a program to find the eligibility of admission for a professional course based on the following criteria: Marks in Math >= 65 Marks in Physics >= 55 [or] Total in all subjects >=180 Marks in Chemistry >= 50

Algorithm:

DECLARE `m`, `p`, and `c` as INTEGER.
READ `m`, `p`, and `c`.
IF `m >= 65 AND p >= 55 AND c >= 50` THEN
PRINT "The candidate is eligible".
ELSE IF the sum `m + p + c >= 180` THEN
PRINT "The candidate is eligible".
ELSE
PRINT "The candidate is not eligible".
END IF

Program:

```
#include<stdio.h> int main()
{
int m,p,c; scanf("%d%d%d",Cm,Cp,Cc);
if (m>=65 CC p>=55 CC c>=50){ printf("The candidate is eligible");
}else if(m+p+c>=180){
printf("The candidate is eligible");
}else{
printf("The candidate is not eligible");
}}
```

Output:

	Input	Expected
✔	70 60 80	The candidate is eligible
✔	50 80 80	The candidate is eligible

Passed all tests! ✔

1.c

Aim: Malini goes to Best save hyper market to buy grocery items. Bestsave hypermarket provides 10% discount on the bill amount B whenever the bill amount B is more than Rs. 2000. The bill amount B is passed as the input to the program and it must print the final amount payable by Malini.

Algorithm:

DECLARE pay and disc as INTEGER.
READ pay.
IF pay > 2000 THEN
SET disc = pay * 0.10.
SET pay = pay - disc.
PRINT pay.
ELSE
PRINT pay.
END IF

Program:

```
#include<stdio.h> int main()

{

int pay,disc; scanf("%d",Cpay); if (pay>2000){ disc=pay*0.10;

pay=pay-disc; printf("%d",pay);

}else{

printf("%d",pay);

}

}
```

Output:

	Input	Expected	Got	
✔	1900	1900	1900	✔
✔	3000	2700	2700	✔

Passed all tests! ✔

1.d

Aim: Baba is very kind to beggars and every day Baba donates half of the amount he has whenever 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 at the beginning of the day.

Algorithm:

DECLARE `m`, `n`, and `i` as INTEGER.
READ `m` and `n`.
FOR `i = 0` TO `n - 1` DO
SET `m = m * n`.
END FOR
PRINT `m`.

Program:

```
#include<stdio.h> int main()

{

int m,n; scanf("%d%d",Cm,Cn); for (int i=0;i<n;i++)

{

m=m*n;

}

printf("%d",m);

}
```

Output:

	Input	Expected	Got	
✔	100 2	400	400	✔

Passed all tests! ✔

1.e

Aim: 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 [starting from Monday through Saturday] he will be awarded Rs. 200 more than the previous day as "Punctuality incentive". Incentive for starting day is passed as input and the number of days N is also passed. The program is to calculate the "Punctuality incentive" P of the employee.

Algorithm:

DECLARE `i`, n, and `sum` as INTEGER.
READ `i` and n.
SET `sum = i`.
FOR `j = 1` TO `n - 1` DO
SET `i = i + 200`.
ADD `i` to `sum`.
END FOR
PRINT `sum`.

Program:

```
#include<stdio.h> int main()

{

int i,n,sum; scanf("%d%d",Ci,Cn); sum=i;

for (int j=1;j<n;j++){ i=i+200;

sum+=i;

}printf("%d",sum);

}
```

Output:

	Input	Expected	Got	
✔	500 3	2100	2100	✔
✔	100 3	900	900	✔

Passed all tests! ✔

1.f

Aim: Two numbers a and b are passed as the input. A number x is also passed as the input. The program must print the numbers divisible by x from b to a range inclusive of a and b.

Algorithm:

DECLARE a, b, and c as INTEGER.

READ a, b, and c.

FOR i = b TO a STEP -1 DO

IF i % c == 0 THEN

PRINT i.

ELSE

CONTINUE.

END FOR

Program:

```
#include<stdio.h> int main()
{
int a,b,c; scanf("%d%d%d",Ca,Cb,Cc); for (int i=b;i>=a;i--)
{
if(i%c==0)
{
printf("%d ",i);
}
else continue;
}
```

```
}
```

Output:

	Input	Expected	Got	
✔	2 40 7	35 28 21 14 7	35 28 21 14 7	✔

Passed all tests! ✔

1.g

AIM: Write a program to find the quotient and remainder of the given integers.

ALGORITHM:

DECLARE a and b as INTEGER.
READ a and b.
PRINT the result of a / b.
PRINT the result of a % b.

PROGRAM:

```
#include<stdio.h> int main()
{
int a,b; scanf("%d%d",Ca,Cb);
printf("%d\n",a/b);
printf("%d",a%b);
}
```

OUTPUT:

	Input	Expected	Got	
✔	12 3	4 0	4 0	✔

Passed all tests! ✔

1.h

AIM: Write a program to find the biggest number out of the 3 given integers.

ALGORITHM:

DECLARE a, b, and c as INTEGER.
READ a, b, and c.
IF a > b AND a > c THEN
PRINT a.
ELSE IF b > a AND b > c THEN
PRINT b.
ELSE IF c > a AND c > b THEN
PRINT c.

PROGRAM:

```
#include<stdio.h> int main()
{
int a,b,c; scanf("%d%d%d",Ca,Cb,Cc); if (a>b CC a>c)
printf("%d",a); else if (b>a CC b>c)
printf("%d",b); else if (c>a CC c>b)
printf("%d",c);
}
```

OUTPUT:

	Input	Expected	Got	
✔	10 20 30	30	30	✔

Passed all tests! ✔

1.i

AIM: Write a C program to find whether the given number is odd or even.

ALGORITHM:

DECLARE m as INTEGER.
READ m.
IF m % 2 == 0 THEN
PRINT "Even".
ELSE
PRINT "Odd".

PROGRAM:

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

OUTPUT:

	Input	Expected	Got	
✔	12	Even	Even	✔
✔	11	Odd	Odd	✔

Passed all tests! ✔

1.j

AIM: Write a C program to find the factorial of a number N.

ALGORITHM:

DECLARE x, i, and fact as INTEGER.

SET fact = 1.

READ x.

FOR i = 1 TO x DO

SET fact = fact * i.

END FOR

PRINT fact.

PROGRAM:

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

OUTPUT:

	Input	Expected	Got	
✔	5	120	120	✔

Passed all tests! ✔

1.k

AIM: Write a C program to find the sum of first N natural.

ALGORITHM:

DECLARE x and sum as INTEGER.

SET sum = 0.

READ x.

FOR i = 1 TO x DO

ADD i to sum.

END FOR

PRINT sum.

PROGRAM:

```
#include<stdio.h> int main()
{
int x,sum=0; scanf("%d",Cx);
for (int i=1;i<=x;i++)
{
sum+=i;
}
printf("%d",sum);
}
```

OUTPUT:

	Input	Expected	Got	
✔	3	6	6	✔

Passed all tests! ✔

1.l

AIM: Write a C program to find the Nth term in the fibonacci series.

ALGORITHM:

DECLARE n, f0, f1, f2, z, and o as INTEGER.
SET f0 = 0, f1 = 1, z = 0, and o = 1.
READ n.
IF n == 0 THEN
PRINT z.
ELSE IF n == 1 THEN
PRINT o.
ELSE
FOR i = 1 TO n - 1 DO
SET f2 = f1 + f0.
SET f0 = f1.
SET f1 = f2.
END FOR
PRINT f2.
END IF

PROGRAM:

```
#include<stdio.h> int main()
{
int n,f0=0,f1=1,f2,z=0,o=1; scanf("%d",Cn);
if(n==0) printf("%d",z);
else if(n==1) printf("%d",o); else{
for(int i=1;i<n;i++){ f2=f1+f0;
f0=f1; f1=f2;
}printf("%d",f2);
}}
```

OUTPUT:

	Input	Expected	Got	
✔	0	0	0	✔
✔	1	1	1	✔
✔	4	3	3	✔

Passed all tests! ✔

1.m

AIM: Write a C program to find the powers of integers.

ALGORITHM:

DECLARE x, y, and p as INTEGER.

READ x and y.

SET p = x^y (use the power function).

PRINT p.

PROGRAM:

```
#include<stdio.h> #include<math.h> int main()
{
int y,x,p; scanf("%d%d",Cx,Cy); p=pow(x,y); printf("%d",p);
}
```

OUTPUT:

	Input	Expected	Got	
✔	2 5	32	32	✔

Passed all tests! ✔

1.n

AIM: Write a C program to find whether the integer is prime or not.

ALGORITHM:

DECLARE m as INTEGER.
READ m.
IF m % 2 != 0 AND m % 3 != 0 AND m % 5 != 0 THEN
PRINT "Prime".
ELSE

PRINT "No Prime".

PROGRAM:

```
#include<stdio.h> int main()
{
int m; scanf("%d",Cm);
if (m%2!=0 CC m%3!=0 CC m%5!=0)
{
printf("Prime");
}
else
{
printf("No Prime");
}
}
```

OUTPUT:

	Input	Expected	Got	
✔	7	Prime	Prime	✔
✔	9	No Prime	No Prime	✔

Passed all tests! ✔

1.o

AIM: Write a C program to find reverse of integer

ALGORITHM:

DECLARE m, rev, and rem as INTEGER.
SET rev = 0.
READ m.
WHILE m != 0 DO
SET rem = m % 10.
SET rev = rev * 10 + rem.
SET m = m / 10.
END WHILE

PRINT rev.

PROGRAM:

```
#include<stdio.h> int main()
{
int m,rev=0,rem; scanf("%d",Cm); while(m!=0)
{
rem=m%10; rev=rev*10+rem; m/=10;
}
printf("%d",rev);
}
```

OUTPUT:

	Input	Expected	Got	
✔	123	321	321	✔

Passed all tests! ✔