KIET Group of Institutions, Ghaziabad

Department of Computer Applications

(An ISO – 9001: 2015 Certified & 'A' Grade accredited Institution by NAAC)

Problem Solving Using C Lab

KCA 151: Session 2020-21

Experiment – No-2

Objective: Program to implement condition statement in C language		
Scheduled Date	**Compiled Date**	**Submission Date**
23-Dec-2020	**23-Dec-2020**	**7-Jan-2021**

Program : write a menu driven program to implement basic arithmetic function using switch and functions,

Algorithm

Step 1: Start
Step 2: read a & b.
Step 3: 1. Addition
2. Subtraction
3. Division
4. Multiplication
5. exit
Step 4: enter you choice
Step 5.1: if(choice ==1)
Return a+b ;
Step 5.2: if(choice ==2)
Return a-b ;
Step 5.3: if(choice == 3)
Return a/b ;
Step 5.4: if(choice == 4)
Return a*b ;
Step 5.5: if(choice == 5)
Exit

Flowchart Segment:

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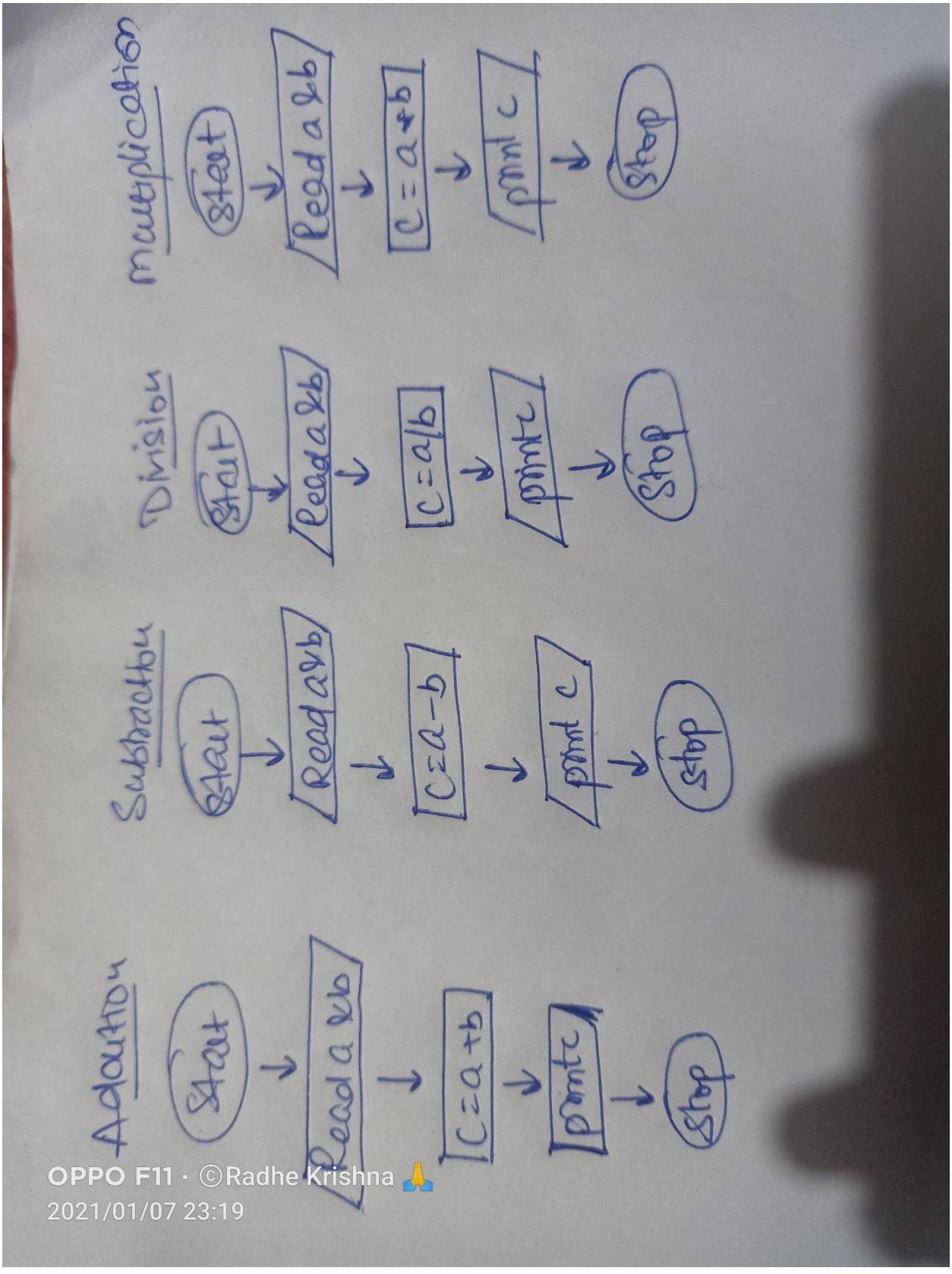

Program

```
#include<stdio.h>
#include<stdlib.h>
int addition(int,int);
int subtraction(int,int);
int division(int,int);
int multiplication(int,int);
int main(){
        int a,b,c,ch;
        char choice='y';

        do{
            printf("enter the value of a & b\n");
            scanf("%d %d",&a,&b);
            printf("_____\n");
            printf("1. addition\n");
            printf("2. subtraction\n");
            printf("3. division\n");
            printf("4. multiplication\n");
            printf("5. Exit \n");
            scanf("%d",&ch);
            switch(ch){
                    case 1: c=addition(a,b);
                    printf("%d",c);
                    break;
                    case 2: c=subtraction(a,b);
                    printf("%d",c);
                    break;
                    case 3: c=division(a,b);
                    printf("%d",c);
                    break;
```

```
                    case 4: c=multiplication(a,b);
                    printf("%d",c);
                    break;
                    case 5: exit(1);
                    default: printf("you enter the wrong choice");
                    break;
                }
                printf("\nenter 'y' for continue\n");
                fflush(stdin);
                scanf("%c",&choice);
            }while(choice=='y');
            return 0;

    }
    int addition(int a,int b){
            return a+b;
    }
    int subtraction(int a,int b){
            return a-b;
    }
    int division(int a,int b){
            return a/b;
    }
    int multiplication(int a,int b){
            return a*b;
}
```

Output Screen

```
enter the value of a & b
5 3
_________________
1. addition
2. subtraction
3. division
4. multiplication
5. Exit
1
8
enter 'y' for continue
y
enter the value of a & b
5
4
_________________
1. addition
2. subtraction
3. division
4. multiplication
5. Exit
2
1
enter 'y' for continue
n
```

Program: write a menu driven program to implement factorial, X to the power Y , addition of digits of the a number using switch and function

Algorithm

Step 1: 1. factorial
2. addition_digit
3. power
4. exit

Step 2: read choice
Step 3.1: if(choice==1)
Read a
For loop: x=x*i
Print("x")
Step 3.2: if(choice==2)

Read n
While(n!=0){
A=n%10
Sum=sum+a
N=n/10;
Print sum

Step 3.3: if(choice==3)
Read x,y
a=x
For loop: a=a*x
Print a

Step 3.4:if(choice==4)
Exit

Step 4: stop

Flowchart

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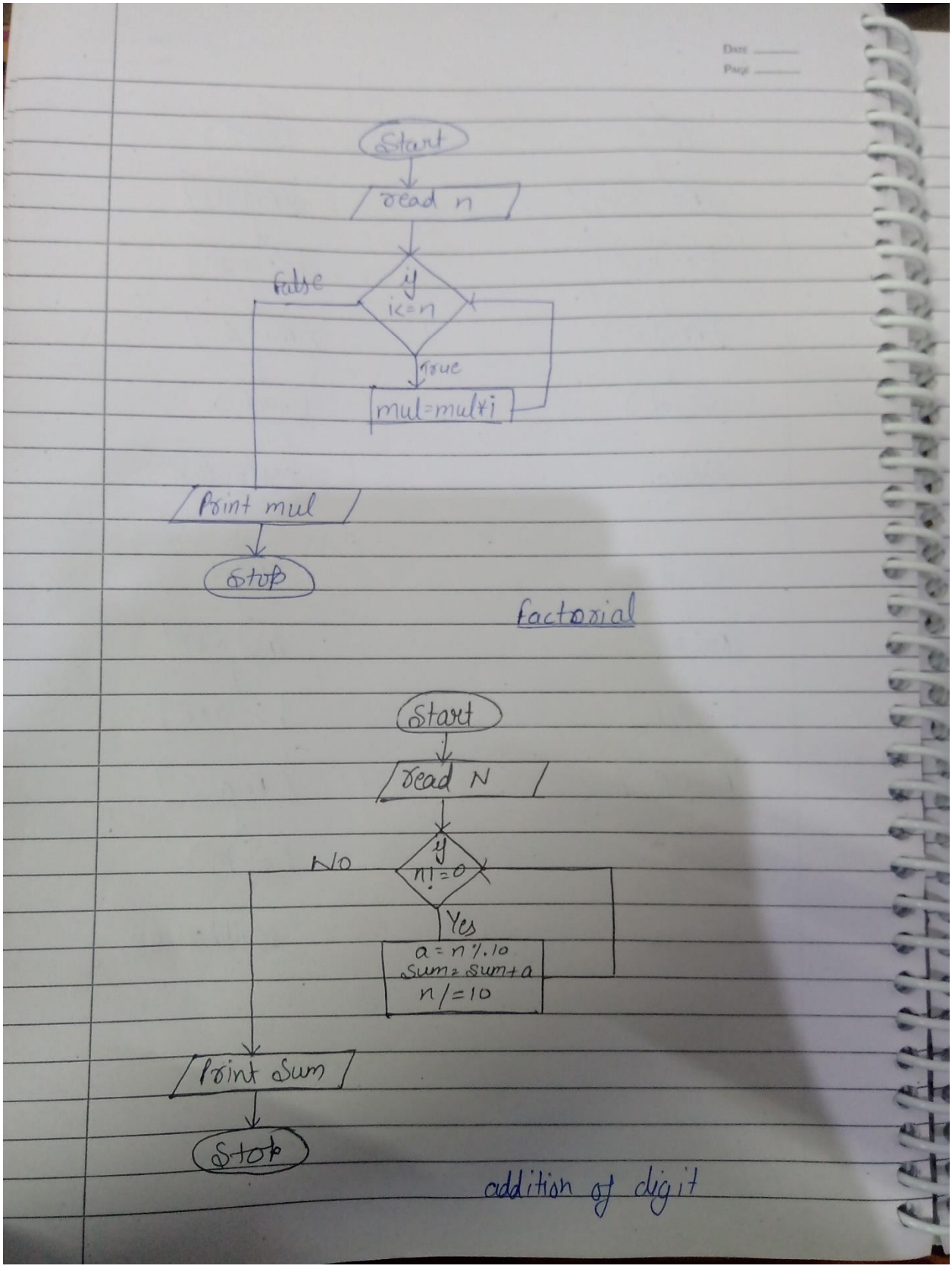

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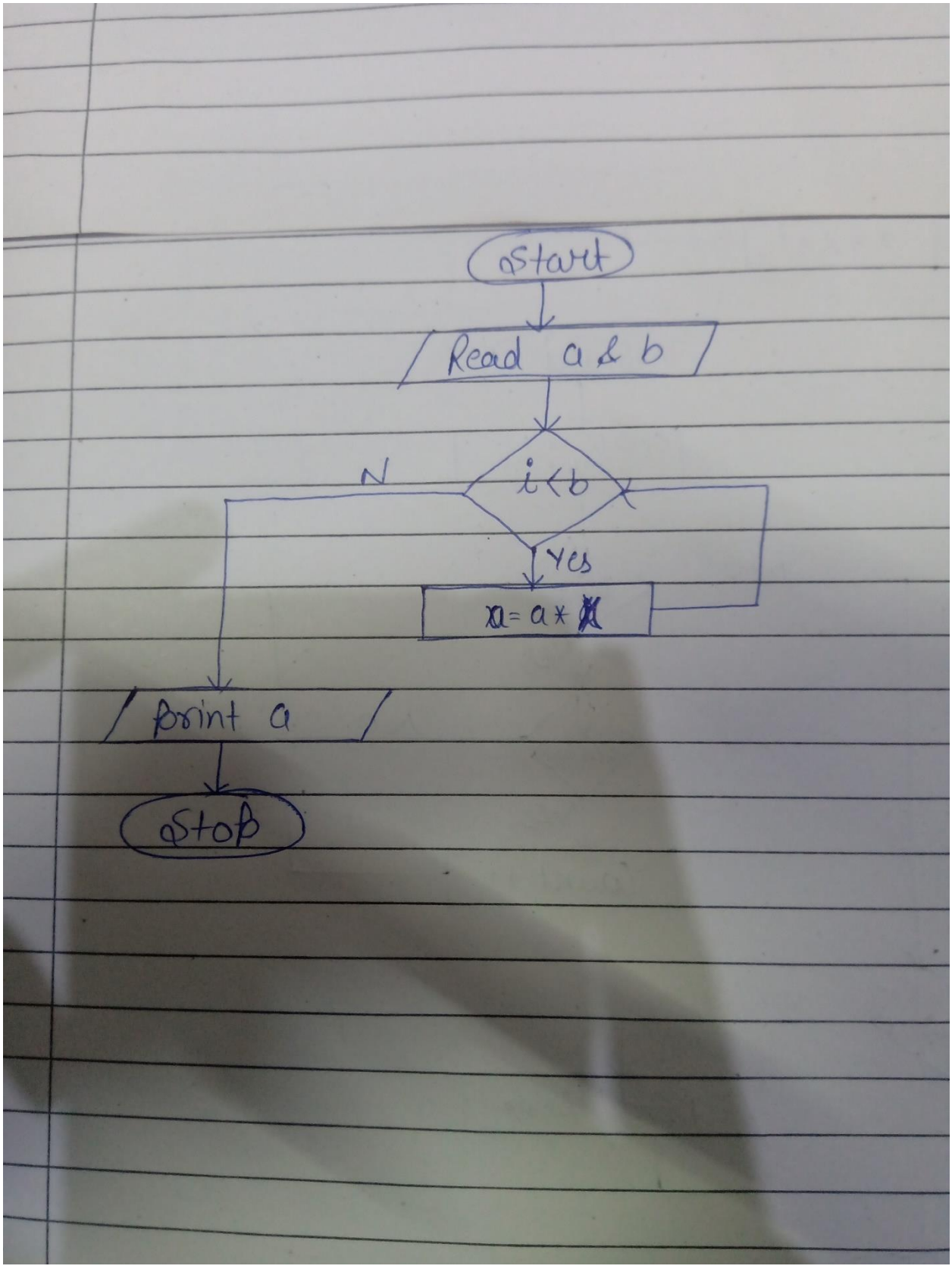


Program

```
#include<stdio.h>
#include<stdlib.h>
long int factorial(int);
int addition_digit(int);
long int power(long int,int);
int main(){
        int b,ch,a=0;
        long int c=0;
        char choice='y';
        do{
            printf("_____\n");
            printf("1. factorial\n");
            printf("2.addition_digit\n");
            printf("3. power\n");
            printf("4. exit\n");
            printf("_____\n");
            scanf("%d",&ch);
            switch(ch){
                    case 1: printf("enter the number for factorial\n");
                    scanf("%d",&a);
                    c=factorial(a);
                    printf("factorial = %ld",c);
                    break;
                    case 2: printf("enter the number for addition\n");
                    scanf("%d",&a);
                    c=addition_digit(a);
                    printf("addition_digit = %ld",c);
                    break;
                    case 3: printf("enter the number for power a & b\n");
                    scanf("%d %d",&a,&b);
                    c=power(a,b);
                    printf("power = %ld",c);
                    break;
                    case 4: exit(0);
                    default:printf("\nyou enter the wrong choice");
```

```
        }
    printf("\nenter 'y' for continue\n");
        fflush(stdin);
        scanf("%c",&choice);
    }while(choice=='y');
    return 0;
}
long int factorial(int a){
    int i;
    int x=a;
    for(i=1;i<=x;i++){
        x=x*i;
    }
    printf("%d",x);
    return x;
}
int addition_digit(int n){
    int a,sum;
    while(n!=0){
        a=n%10;
        sum=sum+a;
        n=n/10;
    }
    return sum;
}
long int power(long int x,int y){
    int i;
    long int a=x;
    for(i=1;i<y;i++){
        x=x*a;
    }
    return a;
}
```

Output

```
_______________________________
1. factorial
2.addition_digit
3. power
4. exit
_______________________________
2
enter the number for addition
2453
addition_digit = 14
enter 'y' for continue
y
_______________________________
1. factorial
2.addition_digit
3. power
4. exit
_______________________________
3
enter the number for power a & b
5
3
power = 125
enter 'y' for continue
n

--------------------------------
Process exited after 19.05 seconds with return value 0
Press any key to continue . . .
```

Program: write a menu driven program to check given number is prime and armstrong using switch and function

Algorithm

Step 1: create variables x
Step 2: Read x .
Step 3: 1.prime number
2.amstrong number
3.exit
Step 4: read choice
Step 5.1: if(choice==1)
Read a
b=b1=a
while(a!=0){
a=a/10

```
 count++
 }
C=count
While(b!=0){
n=b%10
p=n
while(count>1){
n=n*p;
count--;
}
sum=sum+n
b=b/10;
count=c;
}
If(b1==sum){
Print (number is amstrong)
}
Else{
Print (number is not amstrong)
}
```

Step 5.2: if(choice==2)

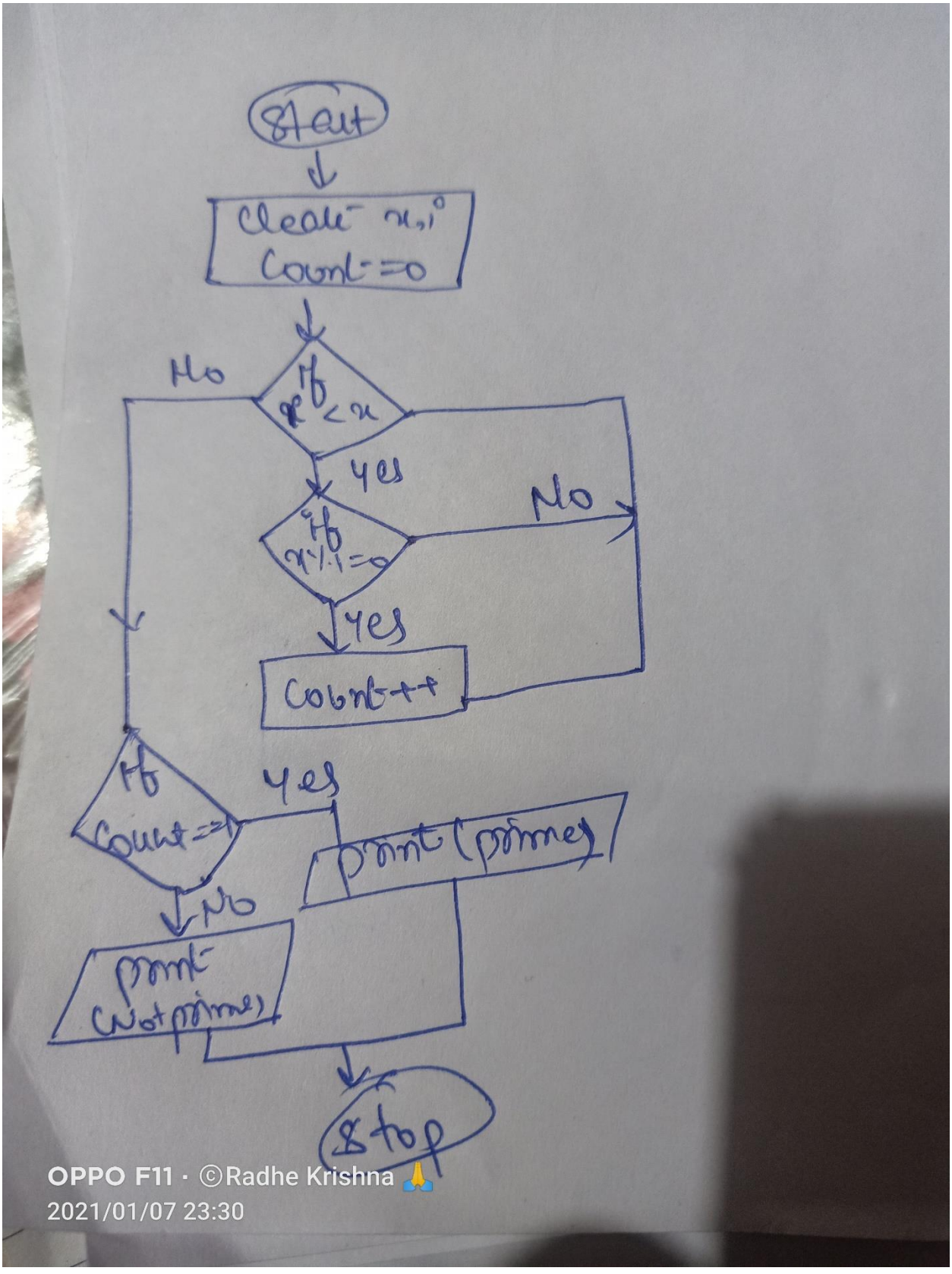
```
  Read x
  For loop
 {
 If(x%i==0)
        {
        Count++
        }
 }
If(count==1){
Print (number is prime)
}
Else{
Print (number is not prime)
}
```

Step 5.3: if(choice==3)

```
  exit
```

Step 6: stop

Flow chart


Start
Declare x,i
Count=0
No
If i<x
Yes
If x%i==0
No
Yes
Count++
If Count==2
Yes
print (prime)
No
print (Not prime)
Stop
OPPO F11 · ©Radhe Krishna
2021/01/07 23:30

Program

```
#include<stdio.h>
#include<stdlib.h>
#include<conio.h>
int amstrong(int);
int prime(int);
int main(){
        int x,ch;
        char choice='y';
        do{
                printf("enter the value : ");
                scanf("%d",&x);
                printf("\n_________\n");
                printf("\n1.prime number");
                printf("\n2.amstrong number");
                printf("\n3.exit\n");
                scanf("%d",&ch);
                switch(ch){
                        case 1: prime(x);
                        break;
                        case 2: amstrong(x);
                        break;
                        case 3: exit(0);
                        default: printf("enter the wrong choice");
```

```
                    break;
                }
                printf("\nenter 'y' for continue\n");
                fflush(stdin);
                scanf("%c",&choice);
        }while(choice=='y' || choice=='Y');
        return 0;
}
int amstrong(int a){
        int i,c,b1,count=0,p,sum=0,n,b;
        b=b1=a;
        while(a!=0){
                a=a/10;
                count++;
        }
        c=count;
        while(b!=0){
                n=b%10;
                p=n;
                while(count>1){
                        n=n*p;
                        count--;
                }
                sum=sum+n;
                b=b/10;
```

```
            count=c;
        }
        if(b1==sum){
            printf("number is amstrong");
        }
        else{
            printf("number is not amstrong ");
        }
        return 0;
}
int prime(int x){
        int i,count=0;
        for(i=1;i<x;i++){
            if(x%i==0){
                count++;
            }
        }
        if(count==1){
            printf("\n number is prime");
        }
        else{
            printf("\n number is not prime");
        }
        return 0;
}
```

Output

```
enter the value : 5


_________

1.prime number
2.amstrong number
3.exit
1

 number is prime
enter 'y' for continue
y
enter the value : 1


_________

1.prime number
2.amstrong number
3.exit
2
number is amstrong
enter 'y' for continue
n

--------------------------------
```

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