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Programming Language Important Codes

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Programming Language

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Find Area,Volume,Circumferance,Perimeter etc of a certain shape .

Laws are mentioned below:

1) Area Of Triangle: $\sqrt{s(s-a)(s-b)(s-c)}$
   Where s= a+b+c/2
   [s= half perimeter/ অর্ধ পরিসীমা]

2) Area Of Equal Side Triangle: $\sqrt{\frac{3}{4}}a^2$

3) 2 Equal Side (a)[বাহু] and Adjacent (b) [ভূমি] Triangle's area: $\frac{b}{4}\sqrt{4a^2-b^2}$

4) Rhombus's Area: $\frac{1}{2}$ d1*d2 [d1,d2 are corners]

5) ***Circle: Area: πr^2

   Circumference: 2πr

   Diameter: 2r

6) Cylinder's Area: 2πrh [বক্রপৃষ্ঠ]

   2πr(h+r) [সমগ্রপৃষ্ঠ]

   Volume: πr^2h

These are all geometric law that can be used in program's code

1) Code Of Area & Circumference of Circle + Symbolic Constant's Example:

```
#include<stdio.h>
```

```
#define PI 3.14 //Symbolic Constant
main() {
float r,p,a;
printf(“Enter The Radius of Circle\n”);
scanf(“%f”,&r);
a= PI*r*r;
p=2*PI*r;
printf(“The AREA of Circle: %f\n”,a);
printf(“The Circumference of Circle:%f\n”,p);
return 0;
}
```

There Can Be Same Category Codes!

2)Find Roots of Quadratic Equation

i)If Determinate (d) <0 Roots Are Complex Number

ii) If Determinate (d) =0 Roots are equal

iii) Otherwise Roots Are Real Number

Quadratic Equation: $ax^2 + bx + c$; a,b,c are roots

Determinate (নির্শচায়ক) : $b^2 - 4ac$

Roots : $\frac{-b \pm \sqrt{b^2-4ac}}{2a}$

Code:

```
#include <stdio.h>
#include <stdlib.h>
 main()
{
   float a,b,c,d,root1,root2;
   printf("Enter The Values Of a,b,c \n");
   scanf("%f%f%f",&a,&b,&c);
   d=b*b-4*a*c;
   if(d<0){
      printf("Roots Are Complex Number\n");
      printf("Roots of The Quadratic Equation are \n");
      printf("%.3f+%.3f",-b/(2*a),sqrt(-d)/(2*a));
      printf("%.3f-%.3f",-b/(2*a),sqrt(-d)/(2*a)
        }
   else if (d==0){
```

```
    printf("Both roots are same\n");
    root1= -b/(2*a);
    printf("Root of The Quadratic Equation is : %.3f",root1);
                }
  else {
   printf("Both roots are real number\n");
   root1= (-b+ sqrt(d)) / (2*a);
   root2= (-b- sqrt(d)) / (2*a);
   printf("Roots of The Quadratic Equation are \n");
   printf("%.3f and %.3f",root1,root2);
  }
  return 0;
}
```

3)Program To Check Whether a Number is prime or not !

Prime Numbers Are Those Numbers which are divisible by itself only

Code:

```
#include <stdio.h>
main()
{
   printf("Enter The Number To Check Whether It is Prime Or Not\n");
   int no,i,ans;
   scanf("%d",&no);
            for(i=2;i<=no/2;i++){
               ans=no%i;
```

```
                        if (ans==0){
                         printf("Not A Prime\n");
                            goto end;
                        }

          }
    printf("Prime Number\n");
    end:
  return 0;
}
```

4)Prime Numbers Upto Nth times

Code:

```
#include<stdio.h>
int main()
{
 long i,j,k;
printf(“Enter The Limit\n”);
scanf("%ld",&k);
 for(i=2; i<=k; i++)
 {
                    for(j=2; j<=i; j++)
                      {
                            if(i%j==0)
                            {
                           break;
                            }

                       }
                  if(i==j){
                  printf("\n%d",i);
                   }
}
return 0;
}
```

5)Factorial Number: Using Recursion

Factorial of a Positive integer means its multiplications with all its previous number till 1.

Code:

```
#include<stdio.h>
Int fact(int);
int main(){
printf("Enter a positive integer to find factorial of it");
int a,i;
scanf("%d",&a);
i=fact(a);
printf("Factorial of %d is :%d\n",a,i);
return 0;
}
int fact(int x){
if(x!=1)
  return x*fact(x-1);
else
return 1;
}
```

To get the logic see the tutorial in Bangla on YouTube
https://www.youtube.com/watch?v=tvCakIfghgg

6) To Check Whether a String is a palindrome or not

Palindrome means a word that remains the same after being reversed.
For example: "DAD" in reverse order it remains the same "DAD"

Code:

```
#include <stdio.h>
#include <string.h> //This is a must as string handling functions have been used
main()
{
  char one[10],two[10];
```

```
    int compare;
    printf("Enter String\n");
    scanf("%s",&one);
    strcpy(two,one); // copying string one into two
    strrev(one);
    compare=strcmp(one,two); /* one is the new reversed one and two is the old
     one string */
            if(compare==0){
               printf("Entered String is a Palindrome");
                     }
            else {
               printf("Entered String is not a Palindrome");
            }
    return 0;
}
```

7)Sum Of Series: সমান্তর ধারার সমষ্টির সূত্র

i)Sum of cubic series: $\left\{\frac{n(n+1)}{2}\right\}^2$ [ঘনের সমষ্টি]

ii) Sum of square series: $\frac{n(n+1)(2n+1)}{6}$ [বর্গের সমষ্টি]

iii) Sum of numbers: $\frac{n(n+1)}{2}$ [n তম পদের সমষ্টি]

Code:

$$1^3 + 2^3 + 3^3 + \cdots + n^3$$

```
#include <stdio.h>

int main() {

 int i,n,sum_total,sum=0;

 printf("Enter Max value of terms\n");

 scanf("%d",&n);

 sum=(n*(n+1))/2;

 sum_total=sum*sum; //1st law from pdf

 printf("Series:");
```

```
        for(i=1;i<=n;i++){
                    if(i!=n){
                        printf("%d^3 + ",i);  //line A
                    }
                    else {
                   printf("%d^3 = %d",i,sum_total); //line B
                    }
                }
   return 0;
 }
```

For Square Series change the line A & line B like this but law must be changed:

```
    printf("%d^2 + ",i);  //line A
    printf("%d^2 = %d",i,sum_total); //line B
```

For Sum of numbers remove “^2” form line A and line B but Law must be changed

8) Sort integers in Array (Bubble Sort Algorithm)

To know about the logic watch this Bangla video tutorial on YouTube
https://www.youtube.com/watch?v=qjOJ9wZF3HU

Code:

```
#include <stdio.h>
int main()
{
  int arr[100],n,c,d,temp;
   printf("Enter the number of elements\n");
   scanf("%d",&n);
   printf("Enter %d integers for sorting in ascending order \n",n);
          for(c=0;c<n;c++){
               scanf("%d",&arr[c]);
          }
          for(c=0;c<n;c++){
```

```
                for(d=0;d<n-1;d++){
                        if(arr[d]>arr[d+1]){    //Line C
                         temp=arr[d];
                         arr[d]=arr[d+1];
                        arr[d+1]=temp;
                      }
                  }
          }
   printf("Sorted list in Ascending order \n: ");
   for(c=0;c<n;c++){
      printf(" %d\n",arr[c]);

   }
   return 0;
}
```

For descending order just change the “>” sign into “<” sign in Line C

9) Sum of digits

For example: Input: 325 Output: 10 (3+2+5)

Code:

```
#include <stdio.h>

int main(){

  printf("Enter number\n");

   int num,sum=0,r;

   scanf("%d",&num);

          for(;num!=0;num=num/10) {

             r= num%10;

             sum=sum+r;

           }

   printf("Sum of Digits %d",sum);
```

```
    return 0;
}
```

10) Reverse Number

For example: Input: 529 Output: 925

```
  Code:
  #include<stdio.h>
   main(){
   int n,reverse=0,rem;
   printf("Enter a number\n");
   scanf(“%d”,&n);
   while (n!=0){
   rem = n%10;
   reverse= (reverse*10)+rem;
   n=n/10;
}
printf("Reversed Number = %d",reverse);
}
```

11) Fibonacci Series:

0 1 1 2 3 5 8 11 ……upto 10 [Can be modified for nth times]

```
 #include<stdio.h>
  main(){
 int f=0,s=1,t,i;
 printf("Fibonacci Series upto 10 is");
        for(i=0;i<10;i++){
                t=f+s;
                printf(" %d",f);
                f=s;
                s=t;
        }
}
```

12) Swap Two Numbers Using Pointer (Call By Reference)

Code:

```
#include <stdio.h>
void swap(int*, int*);
int main()
{
   int x, y;
   printf("Enter the value of x and y\n");
   scanf("%d%d",&x,&y);
   printf("Before Swapping\nx = %d\ny = %d\n", x, y);
   swap(&x, &y);
   printf("After Swapping\nx = %d\ny = %d\n", x, y);
   return 0;
}
void swap(int *a, int *b)
{
 int temp;
  temp = *b;
   *b   = *a;
   *a   = temp;
}
```

Also there are many codes which are important too !

Such as Marge Sort, Sum of Matrix or Multiplication of Matrix, Average for two numbers, CGPA count ,Electricity Bill Leap Year,Swaping two numbers(call by value) etc .

*some codes might get error while compiling because fonts of compiler may not match with this pdf's font. Check the double quotation in the compiler to correct if it is needed. If any kind of mistake can be found, then inform me via this page : http://facebook.com/metacentricbd

Other Codes Will Be Available Soon !

Wanna know what "metaCentRiC" does??

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