Selected Programs

For

HSC

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General

1.write a program to print “Hello world”

```
#include <stdio.h>
int main()
{
   printf("Hello World!");
   return 0;
}
```

2.C Program to add two numbers:

```
#include<stdio.h>
int main()
{
   int a, b, c;
   printf("Enter two numbers to add\n");
   scanf("%d%d", &a, &b);
   c = a + b;
   printf("Sum of the numbers = %d\n", c);
   return 0;
}
```

3.Avarage of three numbers:

```
#include<stdio.h>
void main()
{
int a,b,c, sum;
float d;
printf("Please enter 3 numbers:");
scanf("%d%d%d",&a,&b,&c);
sum=a+b+c;;
d=(float)(a+b+c)/3;
printf("\nAverage is  %.2f",d);
}
```

4.Find out the area of rectangle:

```
#include <stdio.h>
void main()
{
float length, width, area;
printf("Enter length and width of rectangle: ");
scanf("%f%f", &length,&width);
area = (float)(length * width);
printf("Area of rectangle = %.2f sq. units ", area);
return 0;
}
```

5.Find out the area of Circle:

```
#include <stdio.h>
#include <math.h>
#define PI 3.142
void main()
{
float radius, area;
printf("Enter the radius of a circle \n");
scanf("%f", &radius);
area = PI * pow(radius, 2);
printf("Area of a circle = %5.2f\n", area);
}
```

6.Find out Area of Triangle:

```
#include<stdio.h>
void main()
{
double a, b, c, area, s;
printf("\nEnter the sides of the triangle:\n\n");
scanf("%lf%lf%lf", &a, &b, &c);
s = (a+b+c)/2;
area = sqrt(s*(s-a)*(s-b)*(s-c));
printf("The area of the Triangle is: %lf", area);
}
```

7.Convert Temperature From (℃) to (℉) :

```
#include<stdio.h>
void main ()
{
 float C,F;
printf("temperature in Celsius");
scanf("%f",&C);
F=(9*C)/5+32;
printf("temperature in Fahrenheit %.2f",F);
return 0;
}
```

8.Calculate the power of a number:

```
#include <stdio.h>
#include <math.h>
int main()22
{
double a,b, result;
printf("Enter value of a: ");
scanf("%lf", &a);
printf("Enter value of b: ");
scanf("%lf", &b);
result = pow(a,b);
printf("%.1lf^%.1lf = %.2lf", a,b, result);
return 0;
}
```

Conditional Statements

(if /if…else/else…if/switch)

9. Program to check valid triangle

```
#include <stdio.h>
int main()
{
   int a, b, c;
   printf("Enter three sides of triangle: \n");
   scanf("%d%d%d", &a, &b, &c);
   if((a + b > c) && (a+ c > b) && (b + c > a))
   {
   printf("Triangle is valid.");
   }
   else
   {
   printf("Triangle is not valid.");
   }
   return 0;
}
```

10.A number is Positive or Negative:

```
#include <stdio.h>
void main()
{
int a;
printf("Enter a \n");
scanf("%d", &a);
if (a>= 0)
printf("%d is a positive number \n", number);
else
printf("%d is a negative number \n", number);
}
```

11. A number is Positive or Zero or Negative:

```
#include <stdio.h>
void main()
{
int a;
printf("Enter a number \n");
scanf("%d", &a);
if (a >0)
printf("%d is a positive number \n", a);
else if (a==0)
printf("%d is a Zero \n", a);
else
printf("%d is a negative number \n", a);
return 0;
}
```

12. Determine pass & Fail to according to number:

```
#include <stdio.h>
void main()
{
float a;
printf("Enter number \n");
   scanf("%f", &a);
   if (a >= 33)
      printf("%.2f Pass \n", a);
   else
      printf("%.2f is a Fail \n", a);
   return 0;
}
```

13. C program to find whether a given number is divisible by both 7 and 3.

```
#include<stdio.h>
#include<conio.h>
void main()
{
  int num;
  printf("\n Enter a number:");
  scanf("%d",&num);
  if((num%7==0)&&(num%3==0))
  printf("\n %d is divisible by both 7 & 3");
  else
  printf("\n %d is not divisible by both 7 and 3");
  getch();
```

```
}
```

14. Largest Number among of three Numbers:

```
#include <stdio.h>
int main()
{
double n1, n2, n3;
printf("Enter three different numbers: ");
scanf("%lf %lf %lf", &n1, &n2, &n3);
if( n1>=n2 && n1>=n3 )
printf("%.2f is the largest number.", n1);
if( n2>=n1 && n2>=n3 )
printf("%.2f is the largest number.", n2);
if( n3>=n1 && n3>=n2 )
printf("%.2f is the largest number.", n3);
return 0;
}
```

15.check whether a character is vowel or consonant

```
#include <stdio.h>
int main()
{
  char ch;
  printf("Input a character\n");
  scanf("%c", &ch);
  switch(ch)
  {
```

```
    case 'a':
    case 'A':
    case 'e':
    case 'E':
    case 'i':
    case 'I':
    case 'o':
    case 'O':
    case 'u':
     case 'U':
      printf("%c is a vowel.\n", ch);
      break;
    default:
      printf("%c is a consonant.\n", ch);
  }

  return 0;
}
```

16. Find out all roots of equations

```
#include <stdio.h>
#include <math.h>
int main()
{
   double a, b, c, discriminant, root1, root2, realPart, imaginaryPart;
    printf("Enter coefficients a, b and c: ");
    scanf("%lf %lf %lf",&a, &b, &c);
```

```
    discriminant = b*b-4*a*c;
    if (discriminant > 0)
    {
        root1 = (-b+sqrt(discriminant))/(2*a);
        root2 = (-b-sqrt(discriminant))/(2*a);
        printf("root1 = %.2lf and root2 = %.2lf",root1 , root2);
    }
    else if (discriminant == 0)
    {
        root1 = root2 = -b/(2*a);
        printf("root1 = root2 = %.2lf;", root1);
    }
    else
    {
        realPart = -b/(2*a);
        imaginaryPart = sqrt(-discriminant)/(2*a);
        printf("root1 = %.2lf+%.2lfi and root2 = %.2f-%.2fi",
realPart, imaginaryPart, realPart, imaginaryPart);
    }
    return 0;
}
```

17.To cheek Leap Year:

```
#include <stdio.h>
void main()
{
    int year;
    printf("Enter a year: ");
    scanf("%d",&year);
```

```
    if(year%4 == 0)
    {
        if( year%100 == 0)
        {
            if ( year%400 == 0)
                printf("%d is a leap year.", year);
            else
                printf("%d is not a leap year.", year);
        }
        else
            printf("%d is a leap year.", year );
    }
    else
        printf("%d is not a leap year.", year);
    return 0;
}
```

18.Meter to feet and feet to meter conversion:

```
#include<stdio.h>
int main()
{
 int ch;
 double meter,foot;
 printf("\nEnter 1 for convert meter to foot.");
 printf("\nEnter 2 for convert foot to meter.");
 printf("\nEnter 0 for exit.");
 printf("\n\nEnter your choice : ");
```

```
scanf("%d", &ch);
switch(ch)
{
 case 1:
   printf("\nEnter value in meter: ");
   scanf("%lf", &meter);
   foot = (3.28084) * meter;
   printf("\n\t-- Convert Meter to Foot --\n");
   printf("\n%lf meter = %lf foot",meter,foot);
   break;
 case 2:
   printf("\nEnter value in foot: ");
   scanf("%lf", &foot);
   meter = (.3048) * foot;
   printf("\n\t-- Convert Foot to meter --\n");
   printf("\n%lf foot = %lf meter",foot,meter);
   break;
 case 0:
   goto exit;
  default:
   printf("\nYou enter invalid options.");
 }
exit:
return 0;
}
```

19.Grade of Number:

```
#include <stdio.h>
int main(void){
int num;
printf("Enter your mark ");
scanf("%d",&num);
printf(" You entered %d", num);
if(num >= 80){
printf(" You got A grade");
else if ( num >=60){
printf(" You got B grade");
}
else if ( num >=40){
printf(" You got C grade");
}
else if ( num < 40){
printf(" You Failed in this exam");
}
return 0;
}
```

20.To cheek Even Number or Odd number:

```
#include <stdio.h>
int main()
{
   int a;
   printf("Enter an integer: ");
   scanf("%d", &a);
```

```
if(a sss% 2 == 0)
      printf("%d is even.", a);
   else
      printf("%d is odd.", a);
   return 0;
}
```

21.Find out one's net Salary:

Condition :

If main salary is less than or equal 20,000 taka then it's 40% for house rent otherwise 50% for house rent.In both case 1000 taka for medical treatment and 10% taka will be detruncated for govt tax.

```
#include<stdio.h>
void main()
{
 float salary,sum;
printf("Enter the value:");
 scanf("%f",&salary);
 if(salary<=20000){
   sum=(salary+(salary*0.4)+1000-(salary*0.1));
 printf("%f",sum);}
 else
   {
 sum=(salary+(salary*0.5)+1000-(salary*0.1));
 printf("%f",sum);
   }
}
```

Loop

(for/do/while)

22. C Program to Find GCD of two Numbers

```
#include<stdio.h>
int main()
{
int a, b, x, gcd;
printf("Enter a smallest and largest number:");
scanf("%d %d", &a, &b);
if (a < b) {
x = a;
}
else {
x = b;
}
for(; x >= 1; x)
{
if (a % x == 0 && b % x == 0) {
gcd = x;
break;
}
}
printf("GCD is %d\n", gcd);
return 0;
}
```

Or,

```
#include <stdio.h>
int main()
{
int a, b, t, x, gcd;
printf("Enter a smallest and largest number:");
scanf("%d %d", &a, &b);
if (a == 0) gcd = a;
else if (b == 0) gcd = b;
else {
while (b != 0) {
t = b;
b = a % b;
a = t;
}
gcd = a;
}
printf("GCD is %d\n", gcd);
return 0;
}
```

22. C Program to Find LCM of two Numbers

```
#include <stdio.h>
int main()
{
   int a, b, i, gcd, lcm;
  printf("Enter two positive integers: ");
   scanf("%d %d",&a,&b);

   for(i=1; i <= a && i <= b; ++i)
   {
      if(a%i==0 && b%i==0)
         gcd = i;
   }
   lcm = (a*b)/gcd;
printf("The LCM of two numbers %d and %d is %d.", a,b, lcm);
   return 0;
}
```

Or,

```
#include <stdio.h>
int main()
{
   int a, b, minMultiple;
   printf("Enter two positive integers: ");
   scanf("%d %d", &a, &b);
   minMultiple = (a>b) ? a : b;
   while(1)
   {
      if( minMultiple%a==0 && minMultiple%b==0 )
      {
         printf("The LCM of %d and %d is %d.", a, b,minMultiple);
         break;
      }
      ++minMultiple;
   }
   return 0;
}
```

23.To display Character from A to Z

```
#include <stdio.h>
int main()
{
   char c;
   for(c = 'A'; c <= 'Z'; ++c)
      printf("%c ", c);
   return 0;
}
```

24. Odd numbers between 1 to 100

```
#include <stdio.h>
int main()
{
   for(int i=1;i<=100;i++)
   {
      if(i%2==1)
      {
         printf("%d\n", i);
      }
   }
   return 0;
}
```

25. C Program to Find & Display Multiplication table

```
#include <stdio.h>
int main()
{
   int number, i = 1;
  printf(" Enter the Number:");
   scanf("%d", &number);
   printf("Multiplication table of %d:\n ", number);
   printf("-------------------------\n");
   while (i <= 10)
   {
      printf(" %d x %d = %d \n ", number, i, number * i);
      i++;
   }
```

```
    return 0;
}
```

26.Prime number program in C language

```
#include<stdio.h>
int main()
{
   int n, i = 3, count, c;
   printf("Enter the number of prime numbers required\n");
   scanf("%d",&n);
   if ( n >= 1 )
   {
      printf("First %d prime numbers are :\n",n);
      printf("2\n");
   }
   for ( count = 2 ; count <= n ;  )
   {
      for ( c = 2 ; c <= i - 1 ; c++ )
      {
         if ( i%c == 0 )
            break;
      }
      if ( c == i )
      {
         printf("%d\n", i);
         count++;
      }
      i++;
   }
```

```
    return 0;
}
```

27.To print Natural number From 1 to n:

```
#include <stdio.h>
int main()
{
    int i, n;
    printf("Enter any number: ");
    scanf("%d", &n);
    printf("Natural numbers from 1 to %d : \n", n);
    for(i=1; i<=n; i++)
    {
        printf("%d\n", i);
    }
    return 0;
}
```

28.To print Natural number in range:

```
#include <stdio.h>
int main()
{
    int i, start, end;
    printf("Enter start value: ");
    scanf("%d", &start);
    printf("Enter end value: ");
    scanf("%d", &end);
```

```
    printf("Natural numbers from %d to %d : \n",
start, end);
    for(i=start; i<=end; i++)
    {
        printf("%d\n", i);
    }
    return 0;
}
```

29.Findout the average of some numbers:

```
#include<stdio.h>
void main()
{
  int i,n,Sum=0,numbers;
  float Average;
  printf("\nPlease Enter How many Number you want?\n");
  scanf("%d",&n)
  printf("\nPlease Enter the elements one by one\n");
  for(i=0;i<n;++i)
   {
     scanf("%d",&numbers);
     Sum = Sum +numbers;
   }
  Average = Sum/n;
  printf("\nSum of the %d Numbers = %d",n, Sum);
  printf("\nAverage of the %d Numbers = %.2f",n, Average);
  return 0;
}
```

30.To make Right angle :

```
#include <stdio.h>
void main()
{
  int i,j,rows;
  printf("Input number of rows : ");
  scanf("%d",&rows);
  for(i=1;i<=rows;i++)
  {
        for(j=1;j<=i;j++)
          printf("%d",j);
        printf("\n");
  }
}
```

31.Calculate the factorial of given number:

```
#include <stdio.h>
void main(){
 int i,f=1,num;
 printf("Input the number : ");
 scanf("%d",&num);
 for(i=1;i<=num;i++)
    f=f*i;
 printf("The Factorial of %d is: %d\n",num,f);
}
```

32.Binomeal Theorem

```
#include <stdio.h>
void main()
{
   int i,j,n;
   printf("Input number of rows : ");
 scanf("%d",&n);
   for(i=0;i<=n;i++)
   {
     for(j=1;j<=n-i;j++)
printf(" ");
     for(j=1;j<=i;j++)
       printf("%d",j);
       for(j=i-1;j>=1;j--)
            printf("%d",j);
     printf("\n");
   }
}
```

33. Square Root of all numbers from 1 to N

```
#include <stdio.h>
#include <math.h>
int main()
{
   int i,n;
   printf("Enter the value of N: ");
   scanf("%d",&n);

   printf("No  Square  Cube  Square Root\n",n);
   for(i=1;i<=n;i++)
   {
       printf("%d %.2f\n",i,sqrt((double)i));
   }
   return 0;
}
```

ARRAY

34. To sort elements of an array in descending order

```
#include <stdio.h>
void main()
{
int arr1[100];
int n, i, j, tmp;
printf("\n\nsort elements of array in descending order :\n");
printf("-----------------------------------------\n");
printf("Input the size of array : ");
scanf("%d", &n);
printf("Input %d elements in the array :\n",n);
for(i=0;i<n;i++)
{
printf("element - %d : ",i);
scanf("%d",&arr1[i]);
}
for(i=0; i<n; i++)
{
for(j=i+1; j<n; j++)
{
if(arr1[i] < arr1[j])
{
tmp = arr1[i];
arr1[i] = arr1[j];
arr1[j] = tmp;
}
      }
   }

    printf("\nElements of array is sorted in descending order:\n");
   for(i=0; i<n; i++)
   {
      printf("%d  ", arr1[i]);
   }
               printf("\n\n");
}
```

35. To sort elements of array in ascending order

```
#include <stdio.h>
void main()
{
   int arr1[100];
   int n, i, j, tmp;
     printf("\n\nsort elements of array in ascending order :\n ");
     printf("-------------------------------------------\n");

   printf("Input the size of array : ");
   scanf("%d", &n);
     printf("Input %d elements in the array :\n",n);
     for(i=0;i<n;i++)
         {
            printf("element - %d : ",i);
            scanf("%d",&arr1[i]);
   for(i=0; i<n; i++)
   {
      for(j=i+1; j<n; j++)
      {
         if(arr1[j] <arr1[i])
         {
            tmp = arr1[i];
            arr1[i] = arr1[j];
            arr1[j] = tmp;
         }
      }
   }
   printf("\nElements of array in sorted ascending order:\n");
   for(i=0; i<n; i++)
   {
      printf("%d  ", arr1[i]);
   }
               printf("\n\n");
}
```

36.Reverse of an integer:

```
#include <stdio.h>
int main()
{
   int n, reversedNumber = 0, remainder;
   printf("Enter an integer: ");
   scanf("%d", &n);
   while(n != 0)
   {
      remainder = n%10;
      reversedNumber = reversedNumber*10 + remainder;
      n /= 10;
   }
   printf("Reversed Number = %d", reversedNumber);
   return 0;
}
```

37.Ccalculate the value of factorial by using function

```
#include<stdio.h>
#include<math.h>
void main()
{
   printf("Enter a Number to Find Factorial: ");
   fact();
   getch();
}
fact()
{
   int i,fact=1,n;
   scanf("%d",&n);
   for(i=1; i<=n; i++)
   {
      fact=fact*i;
   }
   printf("\nFactorial of a Given Number is: %d ",fact);
   return fact;
}
```

38.Find out the area of triangle ny using function:

```
#include<stdio.h>
#include<math.h>
double area_of_triangle(double, double, double);
nt main()
{
  double a, b, c, area;
  printf("Enter the lengths of sides of a triangle\n");
   scanf("%lf%lf%lf", &a, &b, &c);
  area = area_of_triangle(a, b, c);
printf("Area of the triangle = %.2lf\n", area)
  return 0;
}
double area_of_triangle(double a, double b, double c)
{
  double s, area;
  s = (a+b+c)/2;
  area = sqrt(s*(s-a)*(s-b)*(s-c));
  return area;
}
```

Series

39.The Fibonacci Series

```
#include<stdio.h>
void main()
{
   int a1=0,a2=1,n,i,sum;
   printf("Enter the value:");
   scanf("%d",&n);
   for(i=1;i<=n;i++)
   {
      printf("%d\t",a1);
      sum=a1+a2;
      a1=a2;
      a2=sum;
   }
}
```

Or,

```
#include<stdio.h>
main()
{
   int f1=0,f2=1,f3,i=3,n;
   printf("enter the value:");
   scanf("%d",&n);
   printf("%d\t%d",f1,f2);
   while(i<=n)
   {
      f3=f1+f2;
      printf("\t%d",f3);
      f1=f2;
      f2=f3;
      i=i+1;
   }
   return 0;
}
```

40.1*2*3*4*…..*N

```
#include<stdio.h>
int main()
{
   int i,N,sum=1;
   printf("Enter the value of N: ");
   scanf("%d",&N);
```

```
   for(i=1;i<=N;i++){
            sum= sum*i;
           if(i==1)printf("%d",i);
           else printf("* %d",i);
}
printf("=%d\n",sum);
}
```

41.1^2+2^2+3^2+……+n^2

```
#include<stdio.h>
int main()
{
   int i,N,sum=0;
   printf("Enter the value of N: ");
   scanf("%d",&N);
   for(i=1;i<=N;i++){
            sum= sum+ i*i;
           if(i==1)printf("%d",i);
           else printf("+%d^2",i);
}

   printf("=%d\n",sum);
}
```

42.1+1/2+1/3+1/4+…..+1/N

```
#include<stdio.h>
int main()
{
   double i,N;
   double sum=0;
   printf("Enter the value of N: ");
   scanf("%lf",&N);
   for(i=1;i<=N;i++){
```

```
        sum= sum+ (1/i);
        if(i==1)
           printf("\n%.2lf",i);
        else
           printf(" +1/%.2lf",i);
}

   printf("=%.2lf",sum);
}
```

43.2+4+6+8+10+…..+2n

```
#include<stdio.h>
int main()
{
   int i,N,sum=0;
   printf("Enter the value of N: ");
   scanf("%d",&N);
   for(i=2;i<=N;i=i+2){
         if(i==2)printf("%d",i);
          else printf("+%d",i);
       sum= sum+ i;
}
   printf("=%d\n",sum);
}
```

44.1+2+3+4+5+….+n

```
#include<stdio.h>
int main()
{
   int i,N,sum=0;
   printf("Enter the value of N: ");
   scanf("%d",&N);
```

```
   for(i=1;i<=N;i++){
           sum= sum+ i;
          if(i==1)printf("%d",i);
          else printf("+%d",i);
}
   printf("=%d\n",sum);
}
```

45.1+3+4+5+….

```
#include<stdio.h>
int main()
{
    int i,N,sum=0;
    printf("Enter the value of N: ");
    scanf("%d",&N);
    i=1;
  while(i<=N)
    {
       if(i==1)printf("%d",i);
           else printf("+%d",i);
        sum= sum+ i;
        i=i+2;
}
    printf("=%d\n",sum);
```

or,

```
#include<stdio.h>
int main()
{
int i,n,sum=0;
printf("enter the value of n :");
scanf("%d",&n);
for(i=1;i<=n;i=i+2)
   sum=sum+i;
printf("%d",sum);
return 0;
}
```