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Section - X2

1–

```
#include <stdio.h>
int main()
{
   int num1, num2;
   int sum, sub, mult, mod;
   float div;
   printf("Enter any two numbers: ");
   scanf("%d%d", &num1, &num2);
   sum = num1 + num2;
   sub = num1 - num2;
   mult = num1 * num2;
   div = (float)num1 / num2;
   mod = num1 % num2;
   printf("SUM = %d\n", sum);
   printf("DIFFERENCE = %d\n", sub);
   printf("PRODUCT = %d\n", mult);
   printf("QUOTIENT = %f\n", div);
   printf("MODULUS = %d", mod);
   return 0;
}
```

2–

```
#include <stdio.h>
int main()
{
   float base, height, area;
   printf("Enter base of the triangle: ");
   scanf("%f", &base);
   printf("Enter height of the triangle: ");
   scanf("%f", &height);
   area = (base * height) / 2;
   printf("Area of the triangle = %.2f sq. units", area);
return 0;
}
```

3–

```
#include <stdio.h>
int main()
{
   int a, b, c;
   printf("Enter two angles of triangle: ");
```

```
    scanf("%d%d", &a, &b);
    c = 180 - (a + b);
printf("Third angle of the triangle = %d", c);
return 0;
}
```

4--

```
#include <stdio.h>
int main()
{
    int days, years, weeks;
    printf("Enter days: ");
    scanf("%d", &days);
    years = (days / 365);
    weeks = (days % 365) / 7;
    days  = days - ((years * 365) + (weeks * 7));
    printf("YEARS: %d\n", years);
    printf("WEEKS: %d\n", weeks);
    printf("DAYS: %d", days);
return 0;
}
```

5–

```
#include <stdio.h>
#include <math.h>
int main()
{
    double num, root;
int base, exp;
    long double result = 1.0;
    printf("Enter a base number: ");
    scanf("%d", &base);
    printf("Enter an exponent: ");
    scanf("%d", &exp
    printf("Enter any number to find square root: ");
    scanf("%lf", &num);
while (exp != 0) {
        result *= base;
        --exp;
}
 root = sqrt(num);
    printf("Square root of %.2lf = %.2lf", num, root);
printf("Answer = %.0Lf", result);
return 0;
```

```
}
```

6—

```
#include <stdio.h>

int main()
{
    float eng, phy, chem, math, comp;
    float total, average, percentage;
    printf("Enter marks of five subjects: :- ");
    scanf("%f%f%f%f%f", &eng, &phy, &chem, &math, &comp);
 total = eng + phy + chem + math + comp;
    average = total / 5.0;
    percentage = (total / 500.0) * 100;

    printf("Total marks = %.2f\n", total);
    printf("Average marks = %.2f\n", average);
    printf("Percentage = %.2f", percentage);
 return 0;
}
```

7–

```
 #include <stdio.h>
#define BITS sizeof(int)
int main()
{
    int num, msb;
    printf("Enter any number: ");
    scanf("%d", &num);
    msb = 1 << (BITS - 1);
    if(num & msb)
        printf("MSB of %d is set (1).", num);
    else
        printf("MSB of %d is unset (0).", num);
return 0;
}
```

8–

```
#include <stdio.h>
int main()
{
int var1, var2, temp;
printf("Enter two integersn");
```

```
scanf("%d%d", &var1, &var2);
printf("Before SwappingnFirst variable = %dnSecond variable = %dn", var1, var2);
temp = var1;
var1 = var2;
var2 = temp;
printf("After SwappingnFirst variable = %dnSecond variable = %dn", var1, var2);
return 0;
}
```

9—

```
#include<studio.h>
int main()  {
    int a, b, c, max;
    printf("Enter Three Integers\n");
    scanf("%d %d %d", &a, &b, &c);

    max = (a > b) ? ((a > c) ? a : c) : ((b > c) ? b : c);
    printf("Maximum Number is = %d\n", max);
return 0;
}
```

10—

```
#include <stdio.h>
int main()
{
    char ch;
    printf("Enter any character: ");
    scanf("%c", &ch);
    if((ch >= 'a' && ch <= 'z') || (ch >= 'A' && ch <= 'Z'))
    {
        printf("'%c' is alphabet.", ch);
    }
    else if(ch >= '0' && ch <= '9')
    {
        printf("'%c' is digit.", ch);
    }
    else
    {
        printf("'%c' is special character.", ch);
    }
  return 0;
}
```

11—

```c
#include <stdio.h>
int main()
{
    int unit;
    float amt, total_amt, sur_charge;
    printf("Enter total units consumed: ");
    scanf("%d", &unit);
    if(unit <= 50)
    {
        amt = unit * 0.50;
    }
    else if(unit <= 150)
    {
        amt = 25 + ((unit-50) * 0.75);
    }
    else if(unit <= 250)
    {
        amt = 100 + ((unit-150) * 1.20);
    }
    else
    {
        amt = 220 + ((unit-250) * 1.50);
    }
    sur_charge = amt * 0.20;
    total_amt  = amt + sur_charge;

    printf("Electricity Bill = Rs. %.2f", total_amt);
 return 0;
}
```

12–

```c
#include <stdio.h>
int main() {
 char op;
  double first, second;
  printf("Enter an operator (+, -, *, /): ");
  scanf("%c", &op);
  printf("Enter two operands: ");
  scanf("%lf %lf", &first, &second);

  switch (op) {
    case '+':
      printf("%.1lf + %.1lf = %.1lf", first, second, first + second);
      break;
```

```
    case '-':
      printf("%.1lf - %.1lf = %.1lf", first, second, first - second);
      break;
    case '*':
      printf("%.1lf * %.1lf = %.1lf", first, second, first * second);
      break;
    case '/':
      printf("%.1lf / %.1lf = %.1lf", first, second, first / second);
      break;
    default:
      printf("Error! operator is not correct");
  }
```

AND

```
#include <stdio.h>
int main()
{
    int week;
    printf("Enter week number(1-7): ");
    scanf("%d", &week);
    switch(week)
    {
        case 1:
            printf("Monday");
            break;
        case 2:
            printf("Tuesday");
            break;
        case 3:
            printf("Wednesday");
            break;
        case 4:
            printf("Thursday");
            break;
        case 5:
            printf("Friday");
            break;
        case 6:
            printf("Saturday");
            break;
        case 7:
            printf("Sunday");
            break;
        default:
            printf("Invalid input! Please enter week number between 1-7.");
```

```
    }
return 0;
}
```

13–

```
#include <stdio.h>
int main()
{
    char ch;
    printf("Enter any alphabet: ");
    scanf("%c", &ch);
    switch(ch)
    {
        case 'a':
            printf("Vowel");
            break;
        case 'e':
            printf("Vowel");
            break;
        case 'i':
            printf("Vowel");
            break;
        case 'o':
            printf("Vowel");
            break;
        case 'u':
            printf("Vowel");
            break;
        case 'A':
            printf("Vowel");
            break;
        case 'E':
printf("Vowel");
break;
case 'I':
 printf("Vowel");
 break;
case 'O':
printf("Vowel");
break;
case 'U':
printf("Vowel");
break;
default:
```

```
printf("Consonant");
}
return 0;
}
```

14—

```
#include <stdio.h>
int main()
{
 int num;
printf("Enter any number: ");
scanf("%d", &num);
switch (num > 0)
 {
 case 1:
printf("%d is positive.", num);
break;
case 0:
switch (num < 0)
{
case 1:
printf("%d is negative.", num);
break;
case 0:
printf("%d is zero.", num);
break;
}
break;
 }
return 0;
}
```

15–

```
#include<stdio.h>
int main(){
 int side1, side2, side3;
 printf("Enter sides of triangle:");
scanf("%d%d%d",&side1,&side2,&side3);
if(side1 == side2 && side2 == side3)
printf("Triangle is equilateral");
else if(side1 == side2 || side2 == side3 || side3 == side1)
 printf("Triangle is isosceles");
else
```

```
 printf("Triangle is scalene");
return 0;
}
```

16—

```
#include <stdio.h>
int main()
{
 int i, n, sum=0;
 printf("Enter upper limit: ");
scanf("%d", &n);
 for(i=1; i<=n; i++)
{
sum += i;
}
printf("Sum of first %d natural numbers = %d", n, sum);
return 0;
}
```

17—-

```
#include <stdio.h>
int main()
{
    int i, n;
    printf("Print all even numbers till: ");
    scanf("%d", &n);
printf("Even numbers from 1 to n %d are: \n", n);


    for(i=1; i<=n; i++)
    {

        if(i%2 == 0)
        {
            printf("%d\n", i);
        }
    }
return 0;
}
```

AND

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

```
    int i, n, sum=0;
printf("Enter upper limit: ");
    scanf("%d", &n);
 for(i=2; i<=n; i+=2)
    {
    sum += i;
    }
printf("Sum of all even number between 1 to n %d = %d", n, sum);
return 0;
}
```

18—

```
#include <stdio.h>
int main()
{
    int i, num;
    printf("Enter number to print table: ");
    scanf("%d", &num);

    for(i=1; i<=10; i++)
    {
        printf("%d * %d = %d\n", num, i, (num*i));
    }
return 0;
}
```

19—

```
#include<stdio.h>
int main(){
int x,fact=1,n;
 printf("Enter a number to find factorial: ");
scanf("%d",&n);
for(x=1;x<=n;x++)
fact=fact*x;
printf("Factorial of %d is: %d",n,fact);
return 0;
}
```

20—

```
#include <stdio.h>
int main() {
  int n, reversed = 0, remainder, original;
    printf("Enter an integer: ");
    scanf("%d", &n);
```

```
   original = n;
 while (n != 0) {
       remainder = n % 10;
  reversed = reversed * 10 + remainder;
       n /= 10;
   }
if (original == reversed)
       printf("%d is a palindrome.", original);
   else
       printf("%d is not a palindrome.", original);
 return 0;
}
```

21–

```
#include <stdio.h>
#define BASE 10
int main()
{
   long long num, n;
   int i, lastDigit;
   int freq[BASE];
printf("Enter any number: ");
scanf("%lld", &num);
for(i=0; i<BASE; i++)
 {
 freq[i] = 0;
 }
n = num;
while(n != 0)
{
lastDigit = n %10;
n /= 10;
freq[lastDigit]++;
 }
printf("Frequency of each digit in %lld is: \n", num);
 for(i=0; i<BASE; i++)
 {
 printf("Frequency of %d = %d\n", i, freq[i]);
   }
 return 0;
}
```

22—

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

```
int main() {
  int a, b, x, y, t, gcd, lcm;
 printf("Enter two integers\n");
  scanf("%d%d", &x, &y);
a = x;
 b = y;
 while (b != 0) {
    t = b;
    b = a % b;
    a = t;
  }
 gcd = a;
  lcm = (x*y)/gcd;
printf("Greatest common divisor of %d and %d = %d\n", x, y, gcd);
  printf("Least common multiple of %d and %d = %d\n", x, y, lcm);
return 0;
}
```

23—

```
#include<stdio.h>
int main(){
 int num,i,count,n;
    printf("Enter max range: ");
    scanf("%d",&n);
for(num = 1;num<=n;num++){
count = 0;
for(i=2;i<=num/2;i++){
            if(num%i==0){
                count++;
                break;
            }
        }
         if(count==0 && num!= 1)
            printf("%d ",num);
    }
 return 0;
}
```

24—-

```
#include <stdio.h>
int main()
{
    int n;
    int sum=0;
```

```
    printf("Enter a number");
    scanf("%d",&n);
    int k=n;
    int r;
    while(k!=0)
    {
        r=k%10;
        int f=fact(r);
        k=k/10;
        sum=sum+f;
    }
    if(sum==n)
    {
        printf("\nNumber is a strong");
    }
    else
    {
        printf("\nNumber is not a strong");
    }
    return 0;
}
int fact(int r)
{
    int mul=1;
    for(int i=1;i<=r;i++)
    {
        mul=mul*i;
    }
    return mul;

}
```

25—

```
#include<stdio.h>
int main()
{
 int n1=0,n2=1,n3,i,number;
 printf("Enter the number of elements:");
 scanf("%d",&number);
 printf("\n%d %d",n1,n2);
 for(i=2;i<number;++i)
 {
  n3=n1+n2;
  printf(" %d",n3);
```

```
  n1=n2;
  n2=n3;
 }
  return 0;
 }
```

26—

```
#include<stdio.h>
 int main()
{
int n,r,sum=0,temp;
printf("enter the number=");
scanf("%d",&n);
temp=n;
while(n>0)
{
r=n%10;
sum=sum+(r*r*r);
n=n/10;
}
if(temp==sum)
printf("armstrong  number ");
else
printf("not armstrong number");
return 0;
}
```

27—

```
#include<stdio.h>
#include<conio.h>
void main()
{

int num, rem, sum = 0, i;
printf("Enter a number\n");
scanf("%d", &num);
for(i = 1; i < num; i++)
{
rem = num % i;
if (rem == 0)
{
sum = sum + i;
}
}
```

```
if (sum == num)
printf(" %d is a Perfect Number");
else
printf("\n %d is not a Perfect Number");
getch();
}
```

28—

```
#include <stdio.h>
int main()
{
    int base, exponent;
    long long power = 1;
    int i;
    printf("Enter base: ");
    scanf("%d", &base);
    printf("Enter exponent: ");
scanf("%d", &exponent);
for(i=1; i<=exponent; i++)
 {
  power = power * base;
 }

 printf("%d ^ %d = %lld", base, exponent, power);
return 0;
}
```

29—

```
#include <stdio.h>
int main() {
char c;
printf("Enter a character: ");
 scanf("%c", &c);
printf("ASCII value of %c = %d", c, c);
return 0;
}
```

30—

```
#include <stdio.h>
int getFactorial(int n);
int main()
{
int row, rows, i, value;
```

```
printf("Enter Number of Rows:");
scanf("%d", &rows);
for(row = 0; row < rows; row++)
{
for(i = row; i <= rows; i++)
printf("  ");

for(i = 0; i <= row; i++)
{
value = getFactorial(row)/(getFactorial(i)*getFactorial(row-i));
printf("%4d", value);
}
printf("\n");
}
return 0;
}

int getFactorial(int N){
if(N < 0){
printf("Invalid Input: factorial not defined for \
negative numbers\n");
return 0;
}
int nFactorial = 1, counter;

for(counter = 1; counter <= N; counter++){
nFactorial = nFactorial * counter;
}
return nFactorial;
}
```

31—

```
#include<stdio.h>
int main()
{
int arr[100], size, i, sum = 0;
printf("Enter array size=");
scanf("%d",&size);
printf("Enter array elements=");
   for(i = 0; i < size; i++)
        scanf("%d",&arr[i]);
   for(i = 0; i < size; i++) sum = sum + arr[i];
printf("Sum of the array = %d\n",sum);
return 0;
```

```
}
```

32—

```
#include<stdio.h>
int main()
{
 int i, Size, a[20], b[20];

 printf("\n Please Enter the Array Size \n");
 scanf("%d", &Size);
 printf("\n Please Enter the Array Elements \n");
 for(i = 0; i < Size; i++)
  {
     scanf("%d", &a[i]);
  }
  for(i = 0; i < Size; i++)
  {
    b[i] = a[i];
   }
printf("\n Elements of Second Array are: \n");
 for(i = 0; i < Size; i++)
 {
printf("\n Value Inside Array b[%d] = %d", i, b[i]);
  }
 return 0;;
}
```

33—

```
#include <stdio.h>
 int main()
{
    int arr[100] = { 0 };
    int i, x, pos, n = 10;
    for (i = 0; i < 10; i++)
        arr[i] = i + 1;
    for (i = 0; i < n; i++)
        printf("%d ", arr[i]);
    printf("\n");
    x = 50;
    pos = 5;
    n++;
    for (i = n - 1; i >= pos; i--)
        arr[i] = arr[i - 1];
```

```
    arr[pos - 1] = x;
    for (i = 0; i < n; i++)
        printf("%d ", arr[i]);
    printf("\n");

    return 0;
}
```

34—

```
#include <stdio.h>
#define MAX_SIZE 100
int main()
{
    int arr[MAX_SIZE];
    int i, size, pos;
     printf("Enter size of the array : ");
    scanf("%d", &size);
    printf("Enter elements in array : ");
    for(i=0; i<size; i++)
    {
        scanf("%d", &arr[i]);
    }
printf("Enter the element position to delete : ");
    scanf("%d", &pos);
if(pos < 0 || pos > size)
    {
        printf("Invalid position! Please enter position between 1 to %d", size);
    }
    else
    {
      for(i=pos-1; i<size-1; i++)
        {
            arr[i] = arr[i + 1];
        }
 size--;
printf("\nElements of array after delete are : ");
        for(i=0; i<size; i++)
        {
            printf("%d\t", arr[i]);
        }
    }
return 0;
}
```

35—

```
#include <stdio.h>
int main()
{
   int array[100], search, c, number;
   printf("Enter the number of elements in array\n");
   scanf("%d",&number);
   printf("Enter %d numbers\n", number);
   for ( c = 0 ; c < number ; c++ )
      scanf("%d",&array[c]);
   printf("Enter the number to search\n");
   scanf("%d",&search);
   for ( c = 0 ; c < number ; c++ )
   {
      if ( array[c] == search )   /* if required element found */
      {
         printf("%d is present at location %d.\n", search, c+1);
         break;
      }
   }
   if ( c == number )
      printf("%d is not present in array.\n", search);
   return 0;
}
```

36—

```
#include <stdio.h>
void main()
{
int a[100],i,j,n,temp;
printf ("Enter the number of elements:");
  scanf ("%d",&n);
printf("Enter the values:");
 for (i=0;i<n;i++){
    scanf("%d",&a[i]);
  }
for(i=0;i<n;i++)
  {
    for(j=i+1;j<n;j++)
   {
     if(a[i]>a[j])
    {
       temp = a[i];
       a[i]=a[j];
```

```
      a[j]=temp;
    }
   }
 }
printf("Second largest element:%d",a[n-2]);
}
```

37—-

```
#include <stdio.h>
#define MAX_SIZE 100
int main()
{
    int arr[MAX_SIZE];
    int i, j, size, count = 0;

    printf("Enter size of the array : ");
    scanf("%d", &size);

    printf("Enter elements in array : ");
    for(i=0; i<size; i++)
    {
        scanf("%d", &arr[i]);
    }
for(i=0; i<size; i++)
    {
        for(j=i+1; j<size; j++)
        {

            if(arr[i] == arr[j])
            {
 count++;
break;
}
}
}
printf("\nTotal number of duplicate elements found in array = %d", count);
 return 0;
}
```

38—

```
#include <stdio.h>
#define SIZE 3
int main()
{
```

```
    int A[SIZE][SIZE];
    int num, row, col;
printf("Enter elements in matrix of size %dx%d: \n", SIZE, SIZE);
    for(row=0; row<SIZE; row++)
    {
        for(col=0; col<SIZE; col++)
        {
            scanf("%d", &A[row][col]);
        }
    }
printf("Enter any number to multiply with matrix A: ");
    scanf("%d", &num);
for(row=0; row<SIZE; row++)
    {
        for(col=0; col<SIZE; col++)
        {

            A[row][col] = num * A[row][col];
        }
    }
printf("\nResultant matrix c.A = \n");
    for(row=0; row<SIZE; row++)
    {
        for(col=0; col<SIZE; col++)
        {
            printf("%d ", A[row][col]);
        }
        printf("\n");
    }
 return 0;
}
```

39—

```
#include <stdio.h>
#define SIZE 3
int main()
{
    int A[SIZE][SIZE];
    int row, col, sum = 0;
printf("Enter elements in matrix of size %dx%d: \n", SIZE, SIZE);
    for(row=0; row<SIZE; row++)
    {
        for(col=0; col<SIZE; col++)
        {
```

```
            scanf("%d", &A[row][col]);
        }
    }
for(row=0; row<SIZE; row++)
    {
        sum = sum + A[row][row];
    }

printf("\nSum of diagonal = %d", sum);
return 0;
}
```

40–

```
#include <stdio.h>
int main() {
  int a[10][10], transpose[10][10], r, c;
  printf("Enter rows and columns: ");
  scanf("%d %d", &r, &c);
  printf("\nEnter matrix elements:\n");
  for (int i = 0; i < r; ++i)
  for (int j = 0; j < c; ++j) {
printf("Enter element a%d%d: ", i +1, j +1);
    scanf("%d", &a[i][j]);
  }
  printf("\nEntered matrix: \n");
  for (int i = 0; i < r; ++i)
  for (int j = 0; j < c; ++j) {
    printf("%d  ", a[i][j]);
    if (j == c - 1)
    printf("\n");
  }
  for (int i = 0; i < r; ++i)
  for (int j = 0; j < c; ++j) {
    transpose[j][i] = a[i][j];
  }
  printf("\nTranspose of the matrix:\n");
  for (int i = 0; i < c; ++i)
  for (int j = 0; j < r; ++j) {
    printf("%d  ", transpose[i][j]);
    if (j == r - 1)
    printf("\n");
  }
  return 0;
}
```

41—

```
#include <stdio.h>
#define SIZE 3
int main()
{
int A[SIZE][SIZE];
int row, col, isIdentity;
printf("Enter elements in matrix 3x3: \n");
   for(row=0; row<SIZE; row++)
   {
      for(col=0; col<SIZE; col++)
      {
         scanf("%d", &A[row][col]);
      }
   }
   isIdentity = 1;
   for(row=0; row<SIZE; row++)
   {
      for(col=0; col<SIZE; col++)
      {

         if(row==col && A[row][col]!=1)
         {
            isIdentity = 0;
         }
         else if(row!=col && A[row][col]!=0)
         {
            isIdentity = 0;
         }
      }
   }
   if(isIdentity == 1)
   {
      printf("\nAn Identity Matrix.\n");
      for(row=0; row<SIZE; row++)
      {
         for(col=0; col<SIZE; col++)
         {
            printf("%d ", A[row][col]);
         }

         printf("\n");
      }
```

```
    }
    else
    {
 printf("Not Identity Matrix");
    }
 return 0;
}
```

42—-

```
#include <stdio.h>
#include <stdlib.h>
int main(void)
{
    int i, n, j, k;
    printf("Enter the size of the first array: ");
    scanf("%d", &n);
    int arr1[n];
    printf("Enter the elements of the first array: \n");
    for (i = 0; i < n; i++)
    {
        scanf("%d", &arr1[i]);
    }
    printf("Enter the size of the second array: ");
    scanf("%d", &k);
    int arr2[k];
    printf("Enter the elements of the second array: \n");
    for (j = 0; j < k; j++)
    {
        scanf("%d", &arr2[j]);
    }
    int arr3[n + k];
    i = j = 0;
    int in;
    for (in = 0; in < n + k; in ++)
    {
        if (i < n && j < k)
        {
            if (arr1[i] < arr2[j])
            {
                arr3[in] = arr1[i];
                i++;
            }
            else
            {
```

```
            arr3[in] = arr2[j];
            j++;
        }
    }
    else if (i < n)
    {
        arr3[in] = arr1[i];
        i++;
    }
    else
    {
        arr3[in] = arr2[j];
        j++;
    }
  }
  printf("The merged array is: \n");
  for (in = 0; in < n + k; in++)
  {
    printf("%d ", arr3[in]);
  }
  printf("\n");
  return 0;
}
```

43—

```
#include<stdio.h>
int main()
{
  char name[30];
  printf("Enter name: ");
  gets(name);     //Function to read string from user.
  printf("Name: ");
  puts(name);    //Function to display string.
  return 0;
}
```

44—

```
#include <stdio.h>
#include <string.h>
 int main()
{
  char str[] = { "abbba" };
  int l = 0;
  int h = strlen(str) - 1;
```

```
    while (h > l) {
        if (str[l++] != str[h--]) {
      printf("%s is not a palindrome\n", str);
            return 0;
        }
    }
  printf("%s is a palindrome\n", str);
 return 0;
}
```

45—

```
#include <stdio.h>
int main() {
    char str[1000], ch;
    int count = 0;
printf("Enter a string: ");
 fgets(str, sizeof(str), stdin);
 printf("Enter a character to find its frequency: ");
    scanf("%c", &ch);

    for (int i = 0; str[i] != '\0'; ++i) {
        if (ch == str[i])
            ++count;
    }
printf("Frequency of %c = %d", ch, count);
    return 0;
}
```

46—-

```
#include <stdio.h>
int main()
{
    float radius, diameter, circumference, area;
    printf("Enter radius of circle: ");
    scanf("%f", &radius);
    diameter = 2 * radius;
    circumference = 2 * 3.14 * radius;
    area = 3.14 * (radius * radius);
    printf("Diameter of circle = %.2f units \n", diameter);
    printf("Circumference of circle = %.2f units \n", circumference);
    printf("Area of circle = %.2f sq. units ", area);

    return 0;
```

```
}
```

47—

```
#include <stdio.h>
#include <math.h>
int isPrime(int num);
int isArmstrong(int num);
int isPerfect(int num);
int main()
{
    int num;

    printf("Enter any number: ");
    scanf("%d", &num);
    if(isPrime(num))
    {
        printf("%d is Prime number.\n", num);
    }
    else
    {
        printf("%d is not Prime number.\n", num);
    }
    if(isArmstrong(num))
    {
        printf("%d is Armstrong number.\n", num);
    }
    else
    {
        printf("%d is not Armstrong number.\n", num);
    }
    if(isPerfect(num))
    {
        printf("%d is Perfect number.\n", num);
    }
    else
    {
        printf("%d is not Perfect number.\n", num);
    }

    return 0;
}
int isPrime(int num)
{
    int i;
```

```
    for(i=2; i<=num/2; i++)
    {
        if(num%i == 0)
        {
            return 0;
        }
    }

    return 1;
}
int isArmstrong(int num)
{
    int lastDigit, sum, originalNum, digits;
    sum = 0;

    originalNum = num;
    digits = (int) log10(num) + 1;
    while(num > 0)
    {
        lastDigit = num % 10;
        sum = sum + round(pow(lastDigit, digits));
        num = num / 10;
    }

    return (originalNum == sum);
}
int isPerfect(int num)
{
    int i, sum, n;
    sum = 0;
    n = num;

    for(i=1; i<n; i++)
    {
        if(n%i == 0)
        {
            sum += i;
        }
    }

    return (num == sum);
}
```

48—

```
#include <stdio.h>
int main()
{
  int first, second, *p, *q, sum;

  printf("Enter two integers to add\n");
  scanf("%d%d", &first, &second);

  p = &first;
  q = &second;

  sum = *p + *q;

  printf("Sum of the numbers = %d\n", sum);

  return 0;
}
```

49—

```
#include<stdio.h>
void swap(int *,int *);
void main( )
{
   int n1,n2;
   printf("Enter the two numbers to be swapped\n");
   scanf("%d%d",&n1,&n2);
   printf("\nThe values of n1 and n2 in the main function before calling the swap function are
n1=%d n2=%d",n1,n2);
   swap(&n1,&n2);
   printf("\nThe values of n1 and n2 in the main function after calling the swap function are
n1=%d n2=%d",n1,n2);
}

void swap(int *n1,int *n2)
{
   int temp;
   temp=*n1;
   *n1=*n2;
   *n2=temp;
   printf("\nThe values of n1 and n2 in the swap function after swapping are n1=%d
n2=%d",*n1,*n2);
}
```

50–

```
#include <stdio.h>
#define MAX_SIZE 100
void printArray(int arr[], int size);
int main()
{
    int source_arr[MAX_SIZE], dest_arr[MAX_SIZE];
    int size, i;

    int *source_ptr = source_arr;
    int *dest_ptr   = dest_arr;

    int *end_ptr;
    printf("Enter size of array: ");
    scanf("%d", &size);
    printf("Enter elements in array: ");
    for (i = 0; i < size; i++)
    {
        scanf("%d", (source_ptr + i));
    }
end_ptr = &source_arr[size - 1];
 printf("\nSource array before copying: ");
    printArray(source_arr, size);

    printf("\nDestination array before copying: ");
    printArray(dest_arr, size);
 while(source_ptr <= end_ptr)
    {
        *dest_ptr = *source_ptr;
source_ptr++;
        dest_ptr++;
    }
 printf("\n\nSource array after copying: ");
    printArray(source_arr, size);

    printf("\nDestination array after copying: ");
    printArray(dest_arr, size);


    return 0;
}
void printArray(int *arr, int size)
{
```

```
    int i;
for (i = 0; i < size; i++)
    {
        printf("%d, ", *(arr + i));
    }
}
```

AND

```
#include <stdio.h>
#define MAX_SIZE 100
void printArr(int *arr, int size);
int main()
{
    int arr[MAX_SIZE];
    int size;
    int *left = arr;
    int *right;

    printf("Enter size of array: ");
    scanf("%d", &size);
     right = &arr[size - 1];
printf("Enter elements in array: ");
    while(left <= right)
    {
        scanf("%d", left++);
    }


    printf("\nArray before reverse: ");
printArr(arr, size);
left = arr;

    while(left < right)
    {
        *left    ^= *right;
        *right   ^= *left;
        *left    ^= *right;


        left++;
        right--;
    }
```

```
    printf("\nArray after reverse: ");
    printArr(arr, size);


    return 0;
}
void printArr(int * arr, int size)
{
 int * arrEnd = (arr + size - 1);
while(arr <= arrEnd)
    {
        printf("%d, ", *arr);
arr++;
    }
}
```

51—

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

            printf("*");
        }


        printf("\n");
    }

    return 0;
}
```

52—

```
#include <stdio.h>
int main()
{
    int i, j, N;
    printf("Enter number of rows: ");
```

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

    return 0;
}
```

53—

```
#include <stdio.h>
int main()
{
    int i, j, N;
 printf("Enter number of rows: ");
    scanf("%d", &N);


    for(i=1; i<=N; i++)
    {

        for(j=1; j<=N; j++)
        {
if(i==1 || i==N || j==1 || j==N || i==j || j==(N - i + 1))
            {
                printf("*");
            }
            else
            {
                printf(" ");
            }
        }
```

```
        printf("\n");
    }

    return 0;
}
```

54—

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

    for(i=1; i<=rows; i++)
    {
        for(j=1; j<=rows - i; j++)
        {
            printf(" ");
        }
        for(j=1; j<=rows; j++)
        {
            printf("*");
        }


        printf("\n");
    }

    return 0;
}
```

55—-

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


    for(i=1; i<=rows; i++)
    {
```

```
        for(j=1; j<=rows-i; j++)
        {
            printf(" ");
        }
        for(j=1; j<=rows; j++)
        {
            if(i==1 || i==rows || j==1 || j==rows)
                printf("*");
            else
                printf(" ");
        }

        printf("\n");
    }

    return 0;
}
```