

IIIT KOTA

2024

CSE LAB ASSIGNMENT



NAME – Aakash Saxena

ID – 2024KUCP1016

SECTION A – A1

CODES TO BE DONE : -

3, 4, 5, 6, 7, 8, 9, 11, 12, 13,
15, 16, 18, 19, 20, 21, 22, 25,
26, 27, 28, 30, 32, 33, 34, 35,
36, 37, 38, 39 , 44, 50, 51, 52,
53, 54, 56, 57, 58, 59, 61, 63,
69, 71, 72, 83, 84, 85, 86, 87,
88, 89, 90, 91, 92, 93, 94, 95,
96, 97, 98, 99, 100, 101, 102,
103, 104, 105, 106, 107, 108,
109, 110, 111, 112, 113, 114,
115, 116, 117, 118, 119, 120,
121, 123, 124, 148, 149, 150.

CODE 3-

```
1 #include<stdio.h>
2 int main(){
3     printf("Program to calculate gross salary\n");
4     float salary;
5     printf("Enter salary : ");
6     scanf("%f",&salary);
7     float dearness,house_rent;
8     dearness=(0.4)*salary;
9     house_rent=(0.2)*salary;
10    float gross_salary;
11    gross_salary=salary-(dearness+house_rent);
12    printf("The gross salary is : %f",gross_salary);
13    return 0;
14 }
```

OUTPUT

```
Program to calculate gross salary
Enter salary : 2000
The gross salary is : 800.000000
```

CODE 4-

```
1 #include<stdio.h>
2 int main(){
3     printf("Program to perform unit conversion\n");
4     float km;
5     printf("Enter the ditance in Km : ");
6     scanf("%f",&km);
7     float m,f,i,cm;
8     m=km*1000;
9     f=km*3280.84;
10    i=km*39370.08;
11    cm=km*1000*100;
12    printf("The distance is metres is : %f\n",m);
13    printf("The distance is feet is : %f\n",f);
14    printf("The distance is inches is : %f\n",i);
15    printf("The distance is centimetres is : %f\n",cm);
16    return 0;
17 }
```

OUTPUT

```
Program to perform unit conversion
Enter the ditance in Km : 2.5
The distance is metres is : 0.000000
The distance is feet is : 0.000000
The distance is inches is : 0.000000
The distance is centimetres is : 0.000000
```

CODE 5-

```
1 #include<stdio.h>
2 int main(){
3     printf("Program to calculate avg and percentage\n");
4     int p,c,m,e,h;
5     printf("Enter marks for physics : ");
6     scanf("%d",&p);
7     printf("Enter marks for chemistry : ");
8     scanf("%d",&c);
9     printf("Enter marks for maths : ");
10    scanf("%d",&m);
11    printf("Enter marks for english : ");
12    scanf("%d",&e);
13    printf("Enter marks for hindi : ");
14    scanf("%d",&h);
15    float avg;
16    float total=p+c+m+e+h;
17    avg=(total)/5;
18    int percentage;;
19    percentage=((total)/500)*100;
20    printf("The avg marks are : %f\n",avg);
21    printf("The percentage of the student is : %f\n",percentage);
22    return 0;
23 }
```

OUTPUT

```
Program to calculate avg and percentage
Enter marks for physics : 80
Program to calculate avg and percentage
Enter marks for physics : 80
Enter marks for chemistry : 80
Enter marks for maths : 80
Enter marks for english : 80
Enter marks for hindi : 80
The avg marks are : 80.000000
The percentage of the student is : 80.000000
```

CODE 6-

```
1 #include<stdio.h>
2 int main(){
3     printf("Program to convert farenheit in celsius\n");
4     float f;
5     printf("Enter the temperature in farenheit : ");
6     scanf("%f",&f);
7     float c;
8     c=((f-32)*5)/9;
9     printf("The temperature in celsius is : %f\n",c);
10    return 0;
11 }
```

OUTPUT

```
Program to convert farenheit in celsius
Enter the temperature in farenheit : 100
The temperature in celsius is : 37.777779
```

CODE 7 –

```
1 #include<stdio.h>
2 int main(){
3     printf("Program to print area and perimeter of rectangle and area and circumference of a circle\n");
4     float l,b,r;
5     printf("Enter the length of the rectangle : ");
6     scanf("%f",&l);
7     printf("Enter the breadth of the rectangle : ");
8     scanf("%f",&b);
9     printf("Enter the radius of the circle : ");
10    scanf("%f",&r);
11    //area and perimeter of rectangle
12    float AR,PR;
13    //area and circumference of the circle
14    float AC,CC;
15    AR=l*b;
16    PR=(l+b)*2;
17    AC=3.14*r*r;
18    CC=2*3.14*r;
19    printf("The area and the perimeter of the rectangle is : %f,%f\n",AR,PR);
20    printf("The area and the circumference of the circle is : %f,%f\n",AC,CC);
21    return 0;
22 }
23 }
```

OUTPUT

```
Program to print area and perimeter of rectangle and area and circumference of a circle
Enter the length of the rectangle : 2
Enter the breadth of the rectangle : 3
Enter the radius of the circle : 7
The area and the perimeter of the rectangle is : 6.000000,10.000000
The area and the circumference of the circle is : 153.860001,43.959999
```

CODE 8-

```
1 #include<stdio.h>
2 int main(){
3     printf("To swap the contents of two numbers \n");
4     int c,d;
5     int swap;
6     c=5;
7     d=10;
8     printf(" C is : %d\n",c);
9     printf(" D is : %d\n",d);
10    //swapping the numbers using a third variable
11    swap=c;
12    c=d;
13    d=swap;
14    printf("After swapping");
15    printf(" C is : %d\n",c);
16    printf(" D is : %d\n",d);
17    return 0;
18 }
```

OUTPUT

```
To swap the contents of two numbers
C is : 5
D is : 10
After swapping
C is : 10
D is : 5
```

CODE 9-

```
1 #include <stdio.h>
2
3 int main() {
4     int number, digit, sum = 0;
5
6     printf("Enter a five-digit number: ");
7     scanf("%d", &number);
8     while (number > 0) {
9         digit = number % 10;
10        sum += digit;
11        number /= 10;
12    }
13    printf("The sum of the digits is: %d\n", sum);
14
15    return 0;
16}
17
```

OUTPUT

```
Enter a five-digit number: 12345
The sum of the digits is: 15
```

CODE 11-

```
1 #include <stdio.h>
2
3 int main() {
4     int number, firstDigit, lastDigit, sum;
5
6     // Input the four-digit number
7     printf("Enter a four-digit number: ");
8     scanf("%d", &number);
9     lastDigit = number % 10;
10    firstDigit = number / 1000;
11    sum = firstDigit + lastDigit;
12    printf("The sum of the first and last digits is: %d\n", sum);
13    return 0;
14 }
```

OUTPUT

```
Enter a four-digit number: 1234
The sum of the first and last digits is: 5
```

CODE 12-

```
1 #include <stdio.h>
2
3 int main() {
4     int population = 80000;
5     int men, women, literateMen, literatePeople, illiterateMen, illiterateWomen, literateWomen;
6     men = (52 * population) / 100;
7     women = population - men;
8     literatePeople = (48 * population) / 100;
9     literateMen = (35 * population) / 100;
10    literateWomen = literatePeople - literateMen;
11    illiterateMen = men - literateMen;
12    illiterateWomen = women - literateWomen;
13    printf("Total illiterate men: %d\n", illiterateMen);
14    printf("Total illiterate women: %d\n", illiterateWomen);
15
16    return 0;
17 }
18
```

OUTPUT

```
Total illiterate men: 13600
Total illiterate women: 28000
```

CODE 13-

```
1 #include <stdio.h>
2
3 int main() {
4     int amount, notes100, notes50, notes10, balance;
5     printf("Enter the amount to withdraw (in hundreds): ");
6     scanf("%d", &amount);
7     notes100 = amount / 100;
8     balance = amount % 100;
9     notes50 = balance / 50;
10    balance = balance % 50;
11    notes10 = balance / 10;
12    printf("100 denomination notes: %d\n", notes100);
13    printf("50 denomination notes: %d\n", notes50);
14    printf("10 denomination notes: %d\n", notes10);
15    return 0;
16 }
17
```

OUTPUT

```
Enter the amount to withdraw (in hundreds): 120
100 denomination notes: 1
50 denomination notes: 0
10 denomination notes: 2
```

CODE 15-

```
1 #include <stdio.h>
2
3 int main() {
4     int number, digit, newNumber = 0, place = 1;
5     printf("Enter a five-digit number: ");
6     scanf("%d", &number);
7     if (number < 10000 || number > 99999) {
8         printf("Please enter a valid five-digit number.\n");
9         return 1;
10    }
11    while (number > 0) {
12        digit = number % 10;
13        digit = (digit + 1) % 10;
14        newNumber += digit * place;
15        place *= 10;
16        number /= 10;
17    }
18    printf("The new number is: %d\n", newNumber);
19
20    return 0;
21 }
```

OUTPUT

```
Enter a five-digit number: 23498
```

```
The new number is: 34509
```

CODE 16-

```
assignment > C 16.c > ⌂ main()
1  #include <stdio.h>
2
3  int main() {
4      int i, j, rounded;
5      printf("Enter the integer to round off (i): ");
6      scanf("%d", &i);
7      printf("Enter the integer for the multiple (j): ");
8      scanf("%d", &j);
9      if (i % j == 0) {
10          rounded = i;
11      } else {
12          rounded = ((i / j) + 1) * j;
13      }
14      printf("The next largest multiple of %d for %d is: %d\n", j, i, rounded);
15      return 0;
16  }
```

OUTPUT

```
Enter the integer to round off (i): 345
Enter the integer for the multiple (j): 7
The next largest multiple of 7 for 345 is: 350
```

CODE 18-

```
assignment > C 18.c > main()
1  #include <stdio.h>
2
3  int main() {
4      int startDay = 1, startMonth = 1, startYear = 1992;
5      int endDay = 31, endMonth = 5, endYear = 1992;
6      int totalDays = 0, weeks, leftoverDays;
7      //jan
8      totalDays += 31;
9      totalDays += 29; // Feb
10     totalDays += 31; // March
11     totalDays += 30; // April
12     totalDays += 31; // May
13     weeks = totalDays / 7;
14     leftoverDays = totalDays % 7;
15     printf("Total days: %d\n", totalDays);
16     printf("Total weeks: %d\n", weeks);
17     printf("Leftover days: %d\n", leftoverDays);
18
19
20 }
```

OUTPUT

```
Total days: 152
Total weeks: 21
Leftover days: 5
```

CODE 19-

```
1 #include <stdio.h>
2 int main() {
3     int number;
4     printf("Enter an integer: ");
5     scanf("%d", &number);
6     for (int i = 15; i >= 0; i--) {
7         int bit = (number >> i) & 1;
8         printf("%d", bit);
9     }
10    printf("\n");
11    return 0;
12 }
```

OUTPUT

```
Enter an integer: 2
```

```
000000000000000010
```

CODE 20-

```
assignment > C 20.c > main()
1  #include <stdio.h>
2
3  int main() {
4      char color;
5      printf("Enter a number (0 to 127) to represent rainbow colors: ");
6      scanf("%hd", &color);
7      if (color < 0 || color > 127) {
8          printf("Please enter a number between 0 and 127.\n");
9          return 1;
10     }
11     if (color & 1) printf("Violet\n");
12     if (color & 2) printf("Indigo\n");
13     if (color & 4) printf("Blue\n");
14     if (color & 8) printf("Green\n");
15     if (color & 16) printf("Yellow\n");
16     if (color & 32) printf("Orange\n");
17     if (color & 64) printf("Red\n");
18     return 0;
19 }
```

OUTPUT

```
Enter a number (0 to 127) to represent rainbow colors: 5
Violet
Blue
```

CODE 21-

```
assignment > C 21.c > ...
1
2 #include <stdio.h>
3
4 int main() {
5     unsigned char gamesWon;
6     printf("Enter the number representing the games won by the college (0-255): ");
7     scanf("%hu", &gamesWon);
8     if (gamesWon & 1) printf("Cricket\n");
9     if (gamesWon & 2) printf("Basketball\n");
10    if (gamesWon & 4) printf("Football\n");
11    if (gamesWon & 8) printf("Hockey\n");
12    if (gamesWon & 16) printf("Lawn Tennis\n");
13    if (gamesWon & 32) printf("Table Tennis\n");
14    if (gamesWon & 64) printf("Carom\n");
15    if (gamesWon & 128) printf("Chess\n");
16
17    return 0;
18 }
19
```

OUTPUT

```
Enter the number representing the games won by the college (0-255): 120
Hockey
Lawn Tennis
Table Tennis
Carom
```

CODE 22-

```
assignment > C 22.c > main()
1 #include <stdio.h>
2
3 int main() {
4     unsigned short timeEntry;
5     printf("Enter the 2-byte time entry (in number format): ");
6     scanf("%hu", &timeEntry);
7     unsigned short hours = (timeEntry >> 11) & 0x1F;
8     unsigned short minutes = (timeEntry >> 6) & 0x1F;
9     unsigned short seconds = timeEntry & 0x3F;
10    printf("Time: %02u:%02u:%02u\n", hours, minutes, seconds);
11    return 0;
12 }
13
```

OUTPUT

```
Enter the 2-byte time entry (in number format): 23
Time: 00:00:23
```

CODE 25-

```
assignment > C 25.c > ⌂ main()
1  #include <stdio.h>
2
3  int main() {
4      int year;
5      printf("Enter a year: ");
6      scanf("%d", &year);
7      if ((year % 4 == 0 && year % 100 != 0) || year % 400 == 0) {
8          printf("%d is a leap year.\n", year);
9      } else {
10         printf("%d is not a leap year.\n", year);
11     }
12     return 0;
13 }
14
```

OUTPUT

```
Enter a year: 2005
2005 is not a leap year.
```

CODE 26-

```
assignment > C 26.c > ...
1 #include <stdio.h>
2 int main() {
3     int year, totalDays = 0, i;
4     printf("Enter a year: ");
5     scanf("%d", &year);
6     for (i = 1900; i < year; i++) {
7         if ((i % 4 == 0 && i % 100 != 0) || i % 400 == 0) {
8             totalDays += 2;
9         } else {
10            totalDays += 1;
11        }
12    }
13    int dayOfWeek = totalDays % 7;
14    if (dayOfWeek == 0) {
15        printf("The 1st January %d is a Monday.\n", year);
16    } else if (dayOfWeek == 1) {
17        printf("The 1st January %d is a Tuesday.\n", year);
18    } else if (dayOfWeek == 2) {
19        printf("The 1st January %d is a Wednesday.\n", year);
20    } else if (dayOfWeek == 3) {
21        printf("The 1st January %d is a Thursday.\n", year);
22    } else if (dayOfWeek == 4) {
23        printf("The 1st January %d is a Friday.\n", year);
24    } else if (dayOfWeek == 5) {
25        printf("The 1st January %d is a Saturday.\n", year);
26    } else {
27        printf("The 1st January %d is a Sunday.\n", year);
28    }
29
30    return 0;
```

OUTPUT

```
Enter a year: 2006
The 1st January 2006 is a Sunday.
```

CODE 27-

```
assignment > C 27.c > main()
1  #include <stdio.h>
2
3  int main() {
4      int a, b, c;
5      printf("Enter three numbers: ");
6      scanf("%d %d %d", &a, &b, &c);
7      if (a >= b && a >= c) {
8          printf("%d is the greatest number.\n", a);
9      } else if (b >= a && b >= c) {
10         printf("%d is the greatest number.\n", b);
11     } else {
12         printf("%d is the greatest number.\n", c);
13     }
14     return 0;
15 }
```

OUTPUT

```
Enter three numbers: 11 2 3
11 is the greatest number.
```

CODE 28-

```
assignment > C 28.c > ...
1  #include <stdio.h>
2
3  int main() {
4      int num, reversedNum = 0, originalNum, digit;
5      printf("Enter a five-digit number: ");
6      scanf("%d", &num);
7      originalNum = num;
8      while (num != 0) {
9          digit = num % 10;
10         reversedNum = reversedNum * 10 + digit;
11         num /= 10;
12     }
13     printf("Reversed Number: %d\n", reversedNum);
14     if (originalNum == reversedNum) {
15         printf("The original and reversed numbers are equal.\n");
16     } else {
17         printf("The original and reversed numbers are not equal.\n");
18     }
19
20     return 0;
21 }
```

OUTPUT

```
Reversed Number: 12321
The original and reversed numbers are equal.
```

CODE 30-

```
assignment > C 30.c > main()
1 #include <stdio.h>
2
3 int main() {
4     int a, b, c;
5     printf("Enter the three angles of the triangle: ");
6     scanf("%d %d %d", &a, &b, &c);
7     if (a + b + c == 180 && a > 0 && b > 0 && c > 0) {
8         printf("The triangle is valid.\n");
9     } else {
10        printf("The triangle is not valid.\n");
11    }
12
13    return 0;
14 }
15
```

OUTPUT

```
Enter the three angles of the triangle: 30 60 90
The triangle is valid.
```

CODE 32-

```
assignment > C 32.c > ...
1 #include <stdio.h>
2
3 int main() {
4     float l, b, A, P;
5     printf("Enter the length and breadth of the rectangle: ");
6     scanf("%f %f", &l, &b);
7     A = l * b;
8     P = 2 * (l + b);
9     if (A > P) {
10         printf("The area of the rectangle is greater than its perimeter.\n");
11     } else {
12         printf("The area of the rectangle is not greater than its perimeter.\n");
13     }
14
15     return 0;
16 }
```

OUTPUT

```
Enter the length and breadth of the rectangle: 2
3
The area of the rectangle is not greater than its perimeter.
```

CODE 33-

```
codes > C 33.c > ...
1 #include<stdio.h>
2 int main(){
3     printf("to find wether the points are in straight line or not\n");
4     int x1,x2,x3,y1,y2,y3;
5     printf("Enter the point x1:");
6     scanf("%d",&x1);
7     printf("Enter the point x2:");
8     scanf("%d",&x2);
9     printf("Enter the point x3:");
10    scanf("%d",&x3);
11    printf("Enter the point y1:");
12    scanf("%d",&y1);
13    printf("Enter the point y2:");
14    scanf("%d",&y2);
15    printf("Enter the point y3:");
16    scanf("%d",&y3);
17    int a;
18    a=(x1*(y2-y3)+x2*(y3-y1)+x3*(y1-y2));
19    if (a==0)
20        printf("The points are collinear");
21
22
23    else
24        printf ("The points are non collinear");
25
26    return 0;
27 }
```

OUTPUT

```
to find wether the points are in straight line or not
Enter the point x1:1
Enter the point x2:2
Enter the point x3:3
Enter the point y1:1
Enter the point y2:2
Enter the point y3:3
The points are collinear
```

CODE 34-

```
codes > C 34.c > ⚙ main()
1  #include<stdio.h>
2  #include<math.h>
3  int main(){
4      printf("to determine whether a point is inside a circle or not\n");
5      int x,y;
6      printf("enter the x coordinate of center:");
7      scanf("%d",&x);
8      printf("enter the y coordinate of center:");
9      scanf(" %d",&y);
10     int r;
11     printf("Enter the radius of the circle:");
12     scanf("%d",&r);
13     int x1,y1;
14     printf("Enter the value of x for the point:");
15     scanf("%d",&x1);
16     printf("Enter the value of y for the point:");
17     scanf("%d",&y1);
18     int a;
19     a=sqrt((pow(x1-x,2)-pow(y1-y,2)));
20     if (r>a){
21         printf("The point lies inside the circle");
22     }
23     else if (r==a){
24         printf("The point lies on the circle");
25     }
26     else{
27         printf("the point lies outside the circle");
28     }
29 }
30 return 0;
31 }
```

OUTPUT

```
enter the x coordinate of center:3
enter the y coordinate of center:4
Enter the radius of the circle:5
Enter the value of x for the point:2
Enter the value of y for the point:3
The point lies inside the circle
```

CODE 35-

```
codes > C 35.c > main()
1 #include<stdio.h>
2 #include<math.h>
3 int main(){
4     printf("to determine whether a point lies on x axis or y axis or neither\n");
5     int x,y;
6     printf("enter the x :");
7     scanf("%d",&x);
8     printf("enter the y :");
9     scanf("%d",&y);
10    if (y==0 && x!=0){
11        printf("the point lies on the x axis");
12    }
13    else if (x==0 && y!=0){
14        printf("the point lies on the y axis");
15    }
16    else if (x!=0 && y!=0){
17        printf("The point neither lies on the x axis nor on the y axis");
18    }
19    else {
20        printf("The point lies on the origin");
21    }
22
23    return 0;
24 }
```

OUTPUT

```
to determine whether a point lies on x axis or y axis or neither
enter the x :2
enter the y :0
the point lies on the x axis
```

CODE 36-

```
codes > C 36.c > ...
1 #include<stdio.h>
2 int main (){
3     char a;
4     printf("Enter the character:");
5     scanf("%c",&a);
6     if (a>=65 && a<=90){
7         printf("The character is a capital letter");
8     }
9     else if (a>=97 && a<=122){
10        printf("The character is a small letter");
11    }
12    }
13    else if (a>=48 && a<=57){
14        printf("The character is a digit");
15    }
16    else {
17        printf("The character is a special symbol");
18    }
19 return 0;
20 }
```

OUTPUT

```
Enter the character:A
The character is a capital letter
```

CODE 37-

```
1 #include <stdio.h>
2
3 int main() {
4     char ch;
5
6
7     printf("Enter a character: ");
8     scanf("%c", &ch);
9     if (ch >= 65 && ch <= 90) {
10         printf("The character '%c' is a capital letter.\n", ch);
11     } else if (ch >= 97 && ch <= 122) {
12         printf("The character '%c' is a small case letter.\n", ch);
13     } else if (ch >= 48 && ch <= 57) {
14         printf("The character '%c' is a digit.\n", ch);
15     } else if [((ch >= 0 && ch <= 47) || (ch >= 58 && ch <= 64) ||
16                (ch >= 91 && ch <= 96) || (ch >= 123 && ch <= 127))] {
17         printf("The character '%c' is a special symbol.\n", ch);
18     } else {
19         printf("The character '%c' is not in the standard ASCII range.\n", ch);
20     }
21
22     return 0;
23 }
```

OUTPUT –

```
Enter a character: F
The character 'F' is a capital letter.
```

CODE 39-

```
#include <stdio.h>

int main() {

    float A, B; //A = hardness , B = carbon_content
    int C, grade;// C = tensile strength

    printf("Enter the hardness of the steel: ");
    scanf("%f", &A);
    printf("Enter the carbon content of the steel: ");
    scanf("%f", &B);
    printf("Enter the tensile strength of the steel: ");
    scanf("%d", &C);

    if (A > 50 && B < 0.7 && C > 5600) {
        grade = 10;
    } else if (A > 50 && B < 0.7) {
        grade = 9;
    } else if (B < 0.7 && C > 5600) {
        grade = 8;
    } else if (A > 50 && C > 5600) {
        grade = 7;
    } else if (A > 50 || B < 0.7 || C > 5600) {
        grade = 6;
    } else {
        grade = 5;
    }
}
```

OUTPUT –

```
Enter a character: F
The character 'F' is a capital letter.
```

CODE 44-

```
array > EDarray > assignment > C > Q44.c > main()
1 #include <stdio.h>
2
3 int main() {
4
5     float m1, m2;
6
7
8     printf("Enter marks obtained in subject 1: ");
9     scanf("%f", &m1);
10    printf("Enter marks obtained in subject 2: ");
11    scanf("%f", &m2);
12    if (m1 >= 55 && m2 >= 45) {
13        printf("The student has passed.\n");
14    } else if (m1 >= 45 && m1 < 55 && m2 >= 55) {
15        printf("The student has passed.\n");
16    } else if (m2 < 45 && m1 >= 65) {
17        printf("The student is allowed to reappear in 2.\n");
18    } else {
19        printf("The student has failed.\n");
20    }
21
22    return 0;
23 }
```

OUTPUT –

```
()?$ { .\Q44 }
Enter marks obtained in subje
ct 1: 50
Enter marks obtained in subje
ct 2: 50
The student has failed.
```

CODE 50-

```
#include <stdio.h>

int main() {
    int n, digits = 0;

    printf("Enter a number : ");
    scanf("%d", &n);

    if (n < 0) {
        n = -n;
    }

    do {
        digits++;
        n /= 10;
    } while (n > 0);

    printf("The n of digits is: %d\n", digits);

    return 0;
}
```

OUTPUT –

```
Enter a number : 45
The n of digits is: 2
```

CODE 51-

```
codes > C 51.c > ⚙ main()
1  #include<stdio.h>
2  int main (){
3      int n=1;
4      for (int n=1;n<=10;n++){
5          int a;
6          printf("enter the hours worked overtime by employee %d :",n);
7          scanf("%d",&a);
8          int b=a*12;
9          printf("The total overtime pay for employee %d is %d\n",n,b);
10     }
11     return 0;
12 }
13
```

OUTPUT

```
enter the hours worked overtime by employee 1 :5
The total overtime pay for employee 1 is 60
enter the hours worked overtime by employee 2 :3
The total overtime pay for employee 2 is 36
enter the hours worked overtime by employee 3 :4
The total overtime pay for employee 3 is 48
enter the hours worked overtime by employee 4 :5
The total overtime pay for employee 4 is 60
enter the hours worked overtime by employee 5 :6
The total overtime pay for employee 5 is 72
enter the hours worked overtime by employee 6 :7
The total overtime pay for employee 6 is 84
enter the hours worked overtime by employee 7 :8
The total overtime pay for employee 7 is 96
enter the hours worked overtime by employee 8 :9
The total overtime pay for employee 8 is 108
enter the hours worked overtime by employee 9 :4
The total overtime pay for employee 9 is 48
enter the hours worked overtime by employee 10 :2
The total overtime pay for employee 10 is 24
```

CODE 52-

```
codes > C 52.c > ⚙ main()
1  #include<stdio.h>
2  int main(){
3      printf("To find the factorial of a number\n");
4      int a ;
5      printf("Enter a number:");
6      scanf ("%d",&a);
7      int b=1;
8      while (a>0){
9          b=b*a;
10         a=a-1;
11     }
12     printf("The factorial of the number is %d",b);
13     return 0;
14 }
```

OUTPUT

```
To find the factorial of a number
Enter a number:3
The factorial of the number is 6
```

CODE 53-

```
codes > C 53.c > main()
1 #include<stdio.h>
2 int main(){
3     printf("To find the power of a number \n");
4     int a ;
5     printf("Enter a number:");
6     scanf ("%d",&a);
7
8     int i;
9     int b=a;
10    printf("Enter the second number:");
11    scanf("%d",&i);
12    while (i>1){
13        b=b*a;
14        i=i-1;
15    }
16    printf("the power is %d",b);
17    return 0;
18 }
```

OUTPUT

```
To find the power of a number
Enter a number:3
Enter the second number:2
the power is 9
```

CODE 54-

```
codes > C 54.c > main()
1 #include<stdio.h>
2 int main(){
3     for (int n=0;n<256;n++){
4         printf("%c\n",n);
5     }
6     return 0;
7 }
```

OUTPUT

```
 
 
 
 
 
 
```

And so on.....

CODE 56-

```
#include <stdio.h>

int main() {
    int num, temp, digit, sum;

    printf("Armstrong numbers between 1 and 500 are:\n");

    for (num = 1; num <= 500; num++) {
        temp = num;
        sum = 0;

        while (temp > 0) {
            digit = temp % 10;
            sum += digit * digit * digit;
            temp /= 10;
        }

        if (sum == num) {
            printf("%d\n", num);
        }
    }

    return 0;
}
```

OUTPUT –

```
Armstrong numbers between 1 a
nd 500 are:
1
153
370
371
407
```

CODE 57-

```
codes > C 57.c > main()
1 #include<stdio.h>
2 int main(){
3     printf("Welcome to the matchsticks game\n the rules of the game are \n 1. you pick a 1-4 sticks and then the computer picks 1-4 matches\n 2.the one who is forced to pick the last match loses");
4     printf("Game start\n");
5     int a;
6     a=21;
7     while (a>1){
8         int b;
9         printf("Enter the number of sticks you wanna pick:");
10        scanf("%d",&b);
11        if (b<1 || b>4){
12            printf("The input is wrong please input your choice between 1 and 4");
13            break;
14        }
15        a=a-b;
16        if (a==1){
17            printf("You picked the last one you lose");
18        }
19        int c;
20        c=5-b;
21        a=a-c;
22        printf("the computer picked %d\n",c);
23        if (a==1){
24            printf("You picked the last one you lose");
25        }
26    }
27}
28}
29}
30}
31 }
```

OUTPUT

```
Welcome to the matchsticks game
the rules of the game are
1. you pick a 1-4 sticks and then the computer picks 1-4 matches
2.the one who is forced to pick the last match loses
Game start
Enter the number of sticks you wanna pick:2
the computer picked 3
Enter the number of sticks you wanna pick:3
the computer picked 2
Enter the number of sticks you wanna pick:2
the computer picked 3
Enter the number of sticks you wanna pick:1
the computer picked 4
You picked the last one you lose
```

CODE 58-

```
int main() {
    int num, positive = 0, negative = 0, zeros = 0, choice;

    do {
        printf("Enter a number: ");
        scanf("%d", &num);

        if (num > 0)
            positive++;
        else if (num < 0)
            negative++;
        else
            zeros++;

        printf("Do you want to enter another number? (1 for Yes, 0 for No): ");
        scanf("%d", &choice);
    } while (choice == 1);

    printf("Count of positive numbers: %d\n", positive);
    printf("Count of negative numbers: %d\n", negative);
    printf("Count of zeros: %d\n", zeros);

    return 0;
}
```

OUTPUT –

```
(P:) t .\Q58
Enter a number: 34
Do you want to enter another
number? (1 for Yes, 0 for No)
: 1
Enter a number: 3
Do you want to enter another
number? (1 for Yes, 0 for No)
: 0
Count of positive numbers: 2
Count of negative numbers: 0
Count of zeros: 0
```

CODE 59-

```
codes > C 59.c > ...
1 #include<stdio.h>
2 int main (){
3     int a;
4     printf("Enter a decimal number:");
5     scanf("%d",&a);
6     int b;
7     int c=0;
8     int d=a;
9     while (a>=8){
10         b=a%8;
11         // printf("%d\n",b);
12         a=a/8;
13         // printf("%d\n",a);
14         c=c*10 + b;
15     }
16     c=c*10 + a;
17     // printf("%d\n",c);
18     printf("the octal equivalent of the number is : ");
19     while (c!=0){
20         b=c%10;
21         c=c/10;
22         printf("%d",b);
23     }
24 }
25 }
```

OUTPUT

```
Enter a decimal number:34
the octal equivalent of the number is : 42
```

CODE 61-

```
codes > C 61.c > main()
1  #include<stdio.h>
2  int main(){
3      printf("To find prime numbers between 1 and 300\n");
4      int c=0;
5      for (int i=2;i<=300;i++){
6          for (int j=1;j<i;j++){
7              if (i%j==0){
8                  c=c+1;
9              }
10         }
11     if (c==1){
12         printf(" %d \n",i);
13     }
14     c=0;
15   }
16   return 0;
17 }
```

OUTPUT

```
To find prime numbers between 1 and 300
2
3
5
7
11
13
17
19
23
29
31
37
41
43
47
53
59
61
67
```

And so on.....

CODE 63 –

```
1 #include <stdio.h>
2
3 int main() {
4     int i;
5     float sum = 0.0, fact;
6
7     for (i = 1; i <= 7; i++) {
8         fact = 1;
9         for (int j = 1; j <= i; j++) {
10             fact *= j;
11         }
12         sum += (i % 2 == 0 ? -1.0 : 1.0) * (1.0 / fact);
13     }
14
15     printf("Sum of the series: %.6f\n", sum);
16
17     return 0;
18 }
```

OUTPUT –

```
(*) C:\Users\91903>
Sum of the series: 0.632143
```

CODE 64-

```
1 #include <stdio.h>
2
3 int main() {
4     for (int i = 1; i <= 3; i++) {
5         for (int j = 1; j <= 3; j++) {
6             for (int k = 1; k <= 3; k++) {
7                 printf("%d %d %d\n", i, j, k);
8             }
9         }
10    }
11    return 0;
12 }
```

OUTPUT –

```
(p:)/tmp/1804.s  
1 1 1  
1 1 2  
1 1 3  
1 2 1  
1 2 2  
1 2 3  
1 3 1  
1 3 2  
1 3 3  
2 1 1  
2 1 2  
2 1 3  
2 2 1  
2 2 2  
2 2 3  
2 3 1  
2 3 2  
2 3 3  
3 1 1  
3 1 2  
3 1 3  
3 2 1  
3 2 2  
3 2 3  
3 3 1  
3 3 2  
3 3 3
```

CODE 71-

```
#include <stdio.h>

int main() {
    int r;

    printf("Enter the number of rows (odd number): ");
    scanf("%d", &r);

    if (r % 2 == 0) {
        printf("Please enter an odd number.\n");
    } else {
        int mid = (r + 1) / 2;

        for (int i = 1; i <= mid; i++) {
            for (int j = 1; j <= mid - i; j++) {
                printf(" ");
            }

            for (int k = 1; k <= i; k++) {
                printf("*");
            }
            printf("\n");
        }

        for (int i = mid - 1; i >= 1; i--) {
            for (int j = 1; j <= mid - i; j++) {
                printf(" ");
            }

            for (int k = 1; k <= i; k++) {
                printf("*");
            }
            printf("\n");
        }
    }

    return 0;
}
```

OUTPUT

```
Enter the number of rows: 5
```

```
A B C D E D C B A
```

```
A B C D   D C B A
```

```
A B C       C B A
```

```
A B           B A
```

```
A               A
```

CODE 72-

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

    printf("Enter the number of Rows: ");
    int p;
    scanf("%d", &p);
    if(p%2==0){
        int r=p/2;
        for(int i=0; i!=r; i++){
            for(int k=0; k<=r-i; k++){
                printf(" ");
            }
            for(int k=0; k!=2*i+1; k++){
                printf("*");
            }
            printf("\n");
        }
        for(int i=r-1; i!=-1; i--){
            for(int k=0; k<=r-i; k++){
                printf(" ");
            }
            for(int k=0; k!=2*i+1; k++){
                printf("*");
            }
            printf("\n");
        }
    }
}
```

```

else {
    int r=p;
for(int i=0; i!=(r+1)/2; i++){
    for(int k=0; k<=(r+1)/2-i; k++){
        printf(" ");
    }
    for(int k=0; k!=2*i+1; k++){
        printf("*");
    }
    printf("\n");
}
for(int i=(r-1)/2-1; i!=-1; i--){
    for(int k=-1; k<=(r-1)/2-i; k++){
        printf(" ");
    }
    for(int k=0; k!=2*i+1; k++){
        printf("*");
    }
    printf("\n");
}
}

return 0;

```

OUTPUT –

Enter the number of Rows: 7

```

*
**
 ***
 *****
 ******
 ****
 *
```

CODE 83-

```
#include <stdio.h>

int main() {
    int rows = 5;
    int num = 1;

    for (int i = rows; i >= 1; i--) {

        for (int j = 0; j < rows - i; j++) {
            printf(" ");
        }

        // Print numbers
        for (int k = 1; k <= i; k++) {
            printf("%d", num % 10);
            num++;
        }

        printf("\n");
    }

    return 0;
}
```

OUTPU -

```
12345
6789
012
34
5
```

CODE 84-

```
#include <stdio.h>

int main() {
    int rows, num = 1;

    printf("Enter the number of rows: ");
    scanf("%d", &rows);
    for (int i = 1; i <= rows; i++) {
        for (int j = 1; j <= rows - i; j++) {
            printf(" ");
        }
        for (int k = 1; k <= 2 * i - 1; k++) {
            printf("%d", num % 10);
            num++;
        }
        printf("\n");
    }
    return 0;
}
```

OUTPUT –

```
Enter the number of rows: 5
```

```
      1
     234
    56789
   0123456
  789012345
```

CODE 85-

```
#include<stdio.h>
int main(){
    printf("Enter the number of lines: ");
    int l;
    scanf("%d", &l);
    int a=0;
    for(int i=1; i<=l; i++){
        for(int k=1; k<=i; k++){
            printf("%d", a);
            a+=1;
            if(a==2){
                a=0;
            }
        }
        printf("\n");
    }
    return 0;
}
```

OUTPUT –

```
Enter the number of lines: 6
0
10
101
0101
01010
101010
```

CODE 86-

```
#include<stdio.h>
int main(){
    int n;
    printf("Enter the number of rows: ");
    scanf("%d", &n);
    for(int j=0; j<n; j++){
        for(int i=0; i<n-j; i++){
            printf("%2c", i+65);
        }
        for(int k=0; k< 2*j-1; k++){
            printf("  ");
        }
        if (j==0){
            for(int k=n-j-1; k>0; k--){
                printf("%2c", k+64);
            }
        }
        else {
            for(int k=n-j; k>0; k--){
                printf("%2c", k+64);
            }
        }
        printf("\n");
    }
    return 0;
}
```

OUTPUT -

```
Enter the number of rows: 5
A B C D E D C B A
A B C D   D C B A
A B C       C B A
A B         B A
A           A
```

CODE 87-

```
#include <stdio.h>

int main() {
    int rows;

    printf("Enter the number of rows: ");
    scanf("%d", &rows);

    for (int i = rows; i >= 1; i--) {

        for (int j = 0; j < rows - i; j++) {
            printf(" ");
        }

        for (int k = 1; k <= 2 * i - 1; k++) {
            printf("*");
        }
        printf("\n");
    }

    for (int i = 2; i <= rows; i++) {

        for (int j = 0; j < rows - i; j++) {

            printf(" ");
        }

        for (int k = 1; k <= 2 * i - 1; k++) {
            printf("*");
        }
        printf("\n");
    }

    return 0;
}
```

OUTPUT –

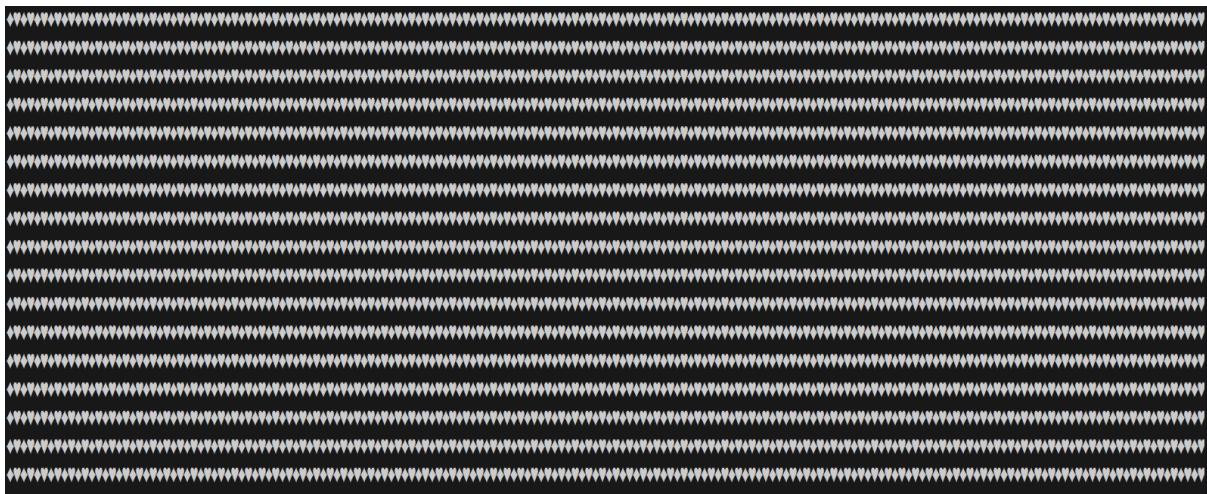
```
Enter the number of rows: 7
```

```
*****  
****  
***  
**  
*  
**  
***  
****  
*****  
*****  
*****
```

CODE 88-

```
codes > C 88.c > ...
1  #include<stdio.h>
2  int main(){
3      printf("program to print diamond and heart");
4
5      for (int i=1;i<=2;i++){
6          printf("%c",3);
7          for (int j=1;j<i;j++){
8              printf("%c",4);
9
10         }
11         i=1;
12     }
13     return 0;
14 }
```

OUTPUT



CODE 89-

```
codes > C 89.c > ⚙ main()
1 #include<stdio.h>
2 int main(){
3     printf("Program to print the table of a number\n");
4     int a;
5     printf("Enter the number:");
6     scanf("%d",&a);
7     for (int i=1;i<=10;i++){
8         printf("%d * %d = ",a,i);
9         printf("%d\n",a*i);
10    }
11    return 0;
12 }
```

OUTPUT

```
Program to print the table of a number
Enter the number:2
2 * 1 = 2
2 * 2 = 4
2 * 3 = 6
2 * 4 = 8
2 * 5 = 10
2 * 6 = 12
2 * 7 = 14
2 * 8 = 16
2 * 9 = 18
2 * 10 = 20
```

CODE 90-

```
#include <stdio.h>

int main() {
    int rows, num = 1;
    printf("Enter the number of rows: ");
    scanf("%d", &rows);
    for (int i = 1; i <= rows; i++) {

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

        for (int k = 1; k <= i; k++) {
            printf("%d ", num);
            num++;
        }

        printf("\n");
    }
    return 0;
}
```

OUTPUT –

```
Enter the number of rows: 4
1
2 3
4 5 6
7 8 9 10
```

CODE 91-

```
assignment > C test2.c > ⊕ main()
1 #include <stdio.h>
2
3 int main() {
4     int n, c = 1;
5     printf("Enter the number of lines: ");
6     scanf("%d", &n);
7     for (int i = 0; i < n; i++) {
8
9         for (int j = 1; j <= i - 1; j++) {
10            printf(" ");
11        }
12        for (int j = 0; j <= i; j++) {
13            if (j == 0 || i == 0) {
14                c = 1;
15            } else {
16                c = c * (i - j + 1) / j;
17            }
18            printf("%d ", c);
19        }
20    }
21    printf("\n");
22 }
23
24 return 0;
25 }
26 }
```

OUTPUT –

```
Enter the number of lines: 4
1
1 1
1 2 1
1 3 3 1
```

CODE 92-

```
assignment > C test2.c > ⊕ main()
1  #include <stdio.h>
2  #include <math.h>
3
4  int main() {
5      double p, r, n, q, a;
6
7      printf("Enter 10 sets of values for principal (p), rate (r), years (n), and compounding frequency (q):\n");
8
9      for (int i = 1; i <= 10; i++) {
10          printf("\nSet %d:\n", i);
11          printf("Principal (p): ");
12          scanf("%lf", &p);
13          printf("Annual rate (r in percentage): ");
14          scanf("%lf", &r);
15          printf("Number of years (n): ");
16          scanf("%lf", &n);
17          printf("Compounding frequency (q): ");
18          scanf("%lf", &q);
19          r = r / 100.0;
20          a = p * pow((1 + r / q), (n * q));
21
22          printf("Compound amount (a): %.2f\n", a);
23      }
24
25      return 0;
26
27 }
```

OUTPUT –

```
Enter 10 sets of values for principal (p), rate (r), years (n), and compounding frequency (q):
Set 1:
Principal (p): 200
Annual rate (r in percentage): 2
Number of years (n): 3
Compounding frequency (q): 4
Compound amount (a): 212.34
```

• • • • •

CODE 93-

```
assignment > C test2.c > main()
1  #include <stdio.h>
2
3  int main() {
4      int sc, fm;
5      int gc = 0;
6      printf("Enter the class obtained by the student (1 for First Class, 2 for Second Class, 3 for Third Class): ");
7      scanf("%d", &sc);
8      printf("Enter the number of subjects the student has failed in: ");
9      scanf("%d", &fm);
10     switch (sc) {
11         case 1:
12             if (fm <= 3) {
13                 gc = fm * 5;
14             }
15             break;
16
17         case 2:
18             if (fm <= 2) {
19                 gc = fm * 4;
20             }
21             break;
22
23         case 3:
24             if (fm == 1) {
25                 gc = 5;
26             }
27             break;
28
29         default:
30             printf("Invalid class entered.\n");
31             return 1;
32     }
33
34     if (gc > 0) {
35         printf("The student is eligible for %d grace marks.\n", gc);
36     } else {
37         printf("The student is not eligible for any grace marks.\n");
38     }
39
40     return 0;
41 }
```

OUTPUT –

```
Enter the class obtained by the student (1 for First Class, 2 for Second Class, 3 for Third Class): 3
Enter the number of subjects the student has failed in: 2
The student is not eligible for any grace marks.
```

CODE 94-

```
codes > C 94.c > main()
1 #include<stdio.h>
2 int main(){
3     printf("Program to display coordinates that lie inside the circle\n");
4     int a;
5     printf("Enter the value of r:");
6     scanf("%d",&a);
7     int count=0;
8     for (int i=-a;i<=a;i++){
9         for (int j=-a;j<=a;j++){
10             int b;
11             b=i*i + j*j;
12
13             if (b<a*a){
14                 printf("(%d,%d)\n",i,j);
15                 count++;
16             }
17             else {
18                 continue;
19             }
20         }
21     }
22     printf("%d",count);
23     return 0;
24 }
```

OUTPUT

```
Program to display coordinates that lie inside the circle
Enter the value of r:5
(-4,-2)
(-4,-1)
(-4,0)
(-4,1)
(-4,2)
(-3,-3)
(-3,-2)
(-3,-1)
(-3,0)
(-3,1)
(-3,2)
(-3,3)
(-2,-4)
(-2,-3)
(-2,-2)
(-2,-1)
(-2,0)
(-2,1)
```

And so on.....

CODE 95-

```
codes > C 95.c > ...
1 #include<stdio.h>
2 int main(){
3     printf("Program 95");
4     for(int i=1;i<=1000;i++){
5         for(int j=1;j<=1000;j++){
6             for(int k=1;k<=1000;k++){
7                 for(int l=1;l<=1000;l++){
8                     if (i<j && j<k && k<l && i+j+k==l){
9                         printf("(%d,%d,%d,%d)",i,j,k,l);
10                    }
11                }
12            }
13        }
14    }
15    return 0;
16 }
17 }
18 }
```

OUTPUT

```
Program 95(1,2,3,6)(1,2,4,7)(1,2,5,8)(1,2,6,9)(1,2,7,10)(1,2,8,11)(1,2,9,12)(1,2,10,13)(1,2,11,14)(1,2,12,15)(1,2,13,16)(1,2,14,17)(1,2,15,18)(1,2,16,19)(1,2,17,20)(1,2,18,21)(1,2,19,22)(1,2,20,23)(1,2,21,24)(1,2,22,25)(1,2,23,26)(1,2,24,27)(1,2,25,28)(1,2,26,29)(1,2,27,30)(1,2,28,31)(1,2,29,32)(1,2,30,33)(1,2,31,34)(1,2,32,35)(1,2,33,36)(1,2,34,37)(1,2,35,38)(1,2,36,39)(1,2,37,40)(1,2,38,41)(1,2,39,42)(1,2,40,43)(1,2,41,44)(1,2,42,45)(1,2,43,46)(1,2,44,47)(1,2,45,48)(1,2,46,49)(1,2,47,50)(1,2,48,51)(1,2,49,52)(1,2,50,53)(1,2,51,54)(1,2,52,55)(1,2,53,56)(1,2,54,57)(1,2,55,58)(1,2,56,59)(1,2,57,60)(1,2,58,61)(1,2,59,62)(1,2,60,63)(1,2,61,64)(1,2,62,65)(1,2,63,66)(1,2,64,67)(1,2,65,68)(1,2,66,69)(1,2,67,70)(1,2,68,71)(1,2,69,72)(1,2,70,73)(1,2,71,74)(1,2,72,75)(1,2,73,76)(1,2,74,77)(1,2,75,78)(1,2,76,79)(1,2,77,80)(1,2,78,81)(1,2,79,82)(1,2,80,83)(1,2,81,84)(1,2,82,85)(1,2,83,86)(1,2,84,87)(1,2,85,88)(1,2,86,89)(1,2,87,90)(1,2,88,91)(1,2,89,92)(1,2,90,93)(1,2,91,94)(1,2,92,95)(1,2,93,96)(1,2,94,97)(1,2,95,98)(1,2,96,99)(1,2,97,100)(1,2,98,101)(1,2,99,102)(1,2,100,103)(1,2,101,104)(1,2,102,105)(1,2,103,106)(1,2,104,107)(1,2,105,108)(1,2,106,109)(1,2,107,110)(1,2,108,111)(1,2,109,112)(1,2,110,113)(1,2,111,114)(1,2,112,115)(1,2,113,116)(1,2,114,117)(1,2,115
```

And so on....

CODE 96-

```
codes > C 96.c > ...
1 #include<stdio.h>
2 #include<math.h>
3 int main(){
4     printf("Program to print perfect squares\n");
5     for(int i=1;i<=9;i++){
6         for(int j=0;j<=9;j++){
7             for(int k=0;k<=9;k++){
8                 for(int l=0;l<=9;l++){
9                     int c;
10                    c= i*1000 + j*100 +k*10 +l*1;
11                    int a;
12                    a= i*10 + j*1;
13                    int b;
14                    b=k*10 + l*1;
15                    if ( pow(c,0.5)==(int)(pow(c,0.5)) && pow(a,0.5)==(int)(pow(a,0.5)) && pow(b,0.5)==(int)(pow(b,0.5)) ){
16                        printf("%d%d%d%d\n",i,j,k,l);
17                    }
18                }
19            }
20        }
21    }
22    return 0;
23 }
```

OUTPUT

```
Program to print perfect squares
1600
1600
1681
3600
4900
6400
8100
```

CODE 97-

```
codes > C 98.c > ...
1 #include<stdio.h>
2 int main(){
3     printf("Program to print the number in words\n");
4     int a;
5     printf("Enter the number:");
6     scanf("%d",&a);
7     int c=a;
8     int count=0;
9     while (c!=0){
10         c=c/10;
11         count++;
12     }
13     int b[count];
14     for (int i=0 ; i<count;i++){
15         b[i]=a%10;
16         a=a/10;
17     }
18 }
19 for (int i=count-1;i>=0;i--){
20     int d=b[i];
21     switch (d){
22         case 1: printf("One ");
23             break;
24         case 2: printf("Two ");
25             break;
26         case 3: printf("Three ");
27             break;
28         case 4: printf("Four ");
29             break;
30         case 5: printf("Five ");
31             break;
32         case 6:
33             printf("Six ");
```

```
        break;
    case 7: printf("Seven ");
    break;
    case 8: printf("Eight ");
    break;
    case 9: printf("Nine ");

    break;
    case 0: printf("Zero");
    break;
    default:
        printf("invalid input");
        break;
}
```

```
}
```

OUTPUT

```
Program to print the number in words  
Enter the number:2365  
Two Three Six Five
```

CODE 99-

```
codes > C 99.c > ...
1  #include<stdio.h>
2  int main(){
3      printf("Program to print the number in words\n");
4      int a;
5      printf("Enter the number:");
6      scanf("%d",&a);
7      int c=a;
8      int count=0;
9      while (c!=0){
10         c=c/10;
11         count++;
12     }
13     int b[count];
14     for (int i=0 ; i<count;i++){
15         b[i]=a%10;
16         a=a/10;
17
18
19    }
20    for (int i=2;i>=0;i--){
21        int d=b[i];
22
23        if (i==2){
24
25            switch (d){
26                case 1: printf("One Hundred ");
27                break;
28                case 2: printf("Two hundred ");
29                break;
30                case 3: printf("Three Hundred ");
31                break;
32                case 4: printf("Four Hundred ");
33                break;
34                case 5: printf("Five Hundred ");
35                break;
36                case 6:
37                    printf("Six Hundred ");
```

```
        break;
    case 7: printf("Seven Hundred ");
    break;
    case 8: printf("Eight Hundred ");
    break;
    case 9: printf("Nine Hundred ");

    break;
default:
printf("invalid input");
break;
}
}
else if (i==1){

switch (d){
    case 1: switch(b[i-1]){
        case 1: printf("Eleven");
        break;
        case 2:
printf("twelve");
        break;
        case 3:
printf("Thirteen");
        break;
        case 4:
printf("Fourteen");
        break;
        case 5:
printf("fifteen");
        break;
    }
}
```

```
        break;
    case 6:
        printf("Sixteen");
        break;
    case 7:
        printf("Seventeen");
        break;
    case 8:
        printf("Eighteen");
        break;
    case 9:
        printf("Nineteen");
        break;
    default:
        printf("invalid input");
        break;
}
break;
case 2: printf("Twenty ");
break;
case 3: printf("Thirty ");
break;
case 4: printf("Fourty ");
break;
case 5: printf("Fifty ");
```

```
        break;
    case 6:
        printf("Sixty ");
        break;
    case 7: printf("Seventy ");
    break;
    case 8: printf("Eighty ");
    break;
    case 9: printf("Ninety ");

    break;
default:
printf("invalid input");
break;
}
}

else if (i==0 && b[i+1]!=1){
switch (d){
case 1: printf("One ");
|   break;
case 2: printf("Two ");
|   break;
case 3: printf("Three ");
break;
case 4: printf("Four ");
break;
case 5: printf("Five ");
break;
case 6:
```

```
    printf("Six ");
    break;
    case 7: printf("Seven ");
    break;
    case 8: printf("Eight ");
    break;
    case 9: printf("Nine ");

    break;
    case 0: printf("Zero");
    break;
    default:
        printf("invalid input");
        break;
    }
}

return 0;
}
```

OUTPUT

```
Program to print the number in words
Enter the number:345
Three Hundred Fourty Five
```

CODE 100-

```
codes > C 100.c > ...
1 #include<stdio.h>
2 int main(){
3     printf("Number conversion\n");
4     int a;
5     printf("Enter the number:");
6     scanf("%d",&a);
7     int b=a;
8     int count=0;
9     while (b!=0){
10         b=b/10;
11         count++;
12     }
13     int base;
14     printf("Enter the base you want the number in:");
15     scanf("%d",&base);
16     int c[32];
17     int rem;
18     int num=0;
19     int i=0;
20     while (a!=0){
21         rem=a%base;
22         c[i]=rem;
23         //     printf("%d\n",c[i]);
24         i++;
25         a=a/base;
26     }
27     while (i!=0){
28         printf("%d",c[i-1]);
29         i--;
30     }
31 }
32 }
```

OUTPUT

```
Number conversion
Enter the number:23
Enter the base you want the number in:2
10111
```

CODE 101-

```
codes > C aayush101.c > ...
1 #include<stdio.h>
2 int main(){
3     printf("Program to find the average of 10 numbers using array\n");
4     int a[10];
5     int sum=0;
6     for (int i=0;i<10;i++){
7         printf("Enter the marks of student %d:",i+1);
8         scanf( "%d",&a[i]);
9         sum=sum+a[i];
10    }
11    float avg;
12    avg = (sum)/10.0;
13    printf("The average is %f",avg);
14 }
15
16
17
```

OUTPUT

```
Program to find the average of 10 numbers using array
Enter the marks of student 1:1
Enter the marks of student 2:2
Enter the marks of student 3:3
Enter the marks of student 4:4
Enter the marks of student 5:56
Enter the marks of student 6:6
Enter the marks of student 7:7
Enter the marks of student 8:8
Enter the marks of student 9:9
Enter the marks of student 10:23
The average is 11.900000
```

CODE 102-

```
codes > C aayush102.c > ⊕ main()
1  #include<stdio.h>
2  int main(){
3      printf("program to add or subtract two arrays\n");
4      int a[3][3];
5      int b[3][3];
6      int sum[3][3];
7      int diff[3][3];
8      for (int i=0;i<3;i++){
9          for(int j=0;j<3;j++){
10             printf("Enter the value %d,%d for array 1:",i+1,j+1);
11             scanf("%d",&a[i][j]);
12             printf("Enter the value %d,%d for array 2:",i+1,j+1);
13             scanf("%d",&b[i][j]);
14             sum[i][j]=a[i][j]+b[i][j];
15             diff[i][j]=a[i][j]-b[i][j];
16         }
17     }
18     printf ("The sum is:\n");
19     for (int i=0;i<3;i++){
20         for (int j=0;j<3;j++){
21             printf("%d ",sum[i][j]);
22         }
23         printf("\n");
24     }
25     printf("the difference is:\n");
26     for(int i=0;i<3;i++){
27         for (int j=0;j<3;j++){
28             printf("%d ",diff[i][j]);
29         }
30     }
31     printf("\n");
32 }
33 return 0;
34 }
```

OUTPUT

```
program to add or subtract two arrays
Enter the value 1,1 for array 1:1
Enter the value 1,1 for array 2:2
Enter the value 1,2 for array 1:1
Enter the value 1,2 for array 2:2
Enter the value 1,3 for array 1:1
Enter the value 1,3 for array 2:2
Enter the value 2,1 for array 1:1
Enter the value 2,1 for array 2:2
Enter the value 2,2 for array 1:1
Enter the value 2,2 for array 2:2
Enter the value 2,3 for array 1:1
Enter the value 2,3 for array 2:2
Enter the value 3,1 for array 1:1
Enter the value 3,1 for array 2:2
Enter the value 3,2 for array 1:1
Enter the value 3,2 for array 2:2
Enter the value 3,3 for array 1:1
Enter the value 3,3 for array 2:2
The sum is:
3 3 3
3 3 3
3 3 3
the difference is:
-1 -1 -1
-1 -1 -1
-1 -1 -1
```

CODE 103-

```
arraysbook.c > C 87.c > main()
1 #include<stdio.h>
2 int main(){
3     printf("To find product of two matrix\n");
4     //defining the two matrix
5     int A[3][3]={{1,2,3},{2,3,4},{3,4,5}};
6     int B[3][3]={{1,2,3},{2,3,4},{3,4,5}};
7     int c[3][3];
8     //finding the product according to cij=aikbkj
9
10    for(int i=0;i<3;i++){
11        for (int j=0;j<3;j++){
12            int sum=0;
13            for (int k=0;k<3;k++){
14                sum=sum + (A[i][k]*B[k][j]);
15            }
16            c[i][j]=sum;
17        }
18    }
19    //printing the array
20    for (int i=0;i<3;i++){
21        for (int j=0;j<3;j++){
22            printf("%d ",c[i][j]);
23        }
24        printf("\n");
25    }
26    return 0;
27 }
```

OUTPUT

```
To find product of two matrix
```

```
14 20 26
```

```
20 29 38
```

```
26 38 50
```

CODE 104-

```
codes > C aayush104.c > ...
1 #include<stdio.h>
2 int main(){
3     printf("program to enter 25 numbers in an array and check for a particular number\n");
4     int a[25];
5     for(int i=0;i<25;i++){
6         printf("Enter value %d for the array:",i+1);
7         scanf("%d",&a[i]);
8     }
9     int b;
10    printf("Enter the number to search for:");
11    scanf("%d",&b);
12    int count =0 ;
13    for (int i=0;i<25;i++){
14        if (b==a[i]){
15            count = count + 1;
16        }
17    }
18    if (count>0){
19        printf("The number appeared %d times",count);
20    }
21    return 0;
22 }
23
24
```

OUTPUT

```
program to enter 25 numbers in an array and check for a particular number
Enter value 1 for the array:1
Enter value 2 for the array:2
Enter value 3 for the array:3
Enter value 4 for the array:4
Enter value 5 for the array:5
Enter value 6 for the array:6
Enter value 7 for the array:7
Enter value 8 for the array:8
Enter value 9 for the array:9
Enter value 10 for the array:12
Enter value 11 for the array:23
Enter value 12 for the array:43
Enter value 13 for the array:54
Enter value 14 for the array:56
Enter value 15 for the array:87
Enter value 16 for the array:89
Enter value 17 for the array:09
Enter value 18 for the array:87
Enter value 19 for the array:65
Enter value 20 for the array:43
Enter value 21 for the array:67
Enter value 22 for the array:43
Enter value 23 for the array:67
Enter value 24 for the array:43
Enter value 25 for the array:76
Enter the number to search for:67
The number appeared 2 times
```

CODE 105-

```
#include<stdio.h>
int main(){
printf("program to enter 25 numbers in an array and find the number of positive,even,negative and odd numbers\n");
int a[25];
for(int i=0;i<25;i++){
printf("Enter value %d for the array:",i+1);
scanf("%d",&a[i]);
}
int p=0;
int n=0;
int e=0;
int o=0;

for (int i=0;i<25;i++){
if (a[i]>0){
p = p + 1;
}
else if (a[i]<0){
n=n+1;
}
}
for (int i=0;i<25;i++){
if (a[i]%2==0){
e = e + 1;
}
else if (a[i]%2!=0){
o=o+1;
}
}

printf("The number of positive numbers are %d \n",p);
printf("The number of negative numbers are %d \n",n);
printf("The number of even numbers are %d \n",e);
printf("The number of odd numbers are %d \n",o);
```

```
return 0;
}
```

OUTPUT

```
program to enter 25 numbers in an array and find the number of positive,even,negative and odd numbers
Enter value 1 for the array:1
Enter value 2 for the array:2
Enter value 3 for the array:3
Enter value 4 for the array:4
Enter value 5 for the array:5
Enter value 6 for the array:6
Enter value 7 for the array:7
Enter value 8 for the array:8
Enter value 9 for the array:9
Enter value 10 for the array:78
Enter value 11 for the array:56
Enter value 12 for the array:-323
Enter value 13 for the array:-23
Enter value 14 for the array:43
Enter value 15 for the array:32
Enter value 16 for the array:21
Enter value 17 for the array:6
Enter value 18 for the array:-56
Enter value 19 for the array:-23
Enter value 20 for the array:453
Enter value 21 for the array:-78
Enter value 22 for the array:-32
Enter value 23 for the array:-1
Enter value 24 for the array:32
Enter value 25 for the array:4
The number of positive numbers are 18
The number of negative numbers are 7
The number of even numbers are 13
The number of odd numbers are 12
```

CODE 105-

```
aayush > C binary_search.c > main()
1 #include<stdio.h>
2 int main(){
3     printf("Program to implement binary search\n");
4     int a[7]={1,3,4,6,34,56,69};
5     int size=sizeof(a)/sizeof(a[0]);
6     int st=0,end=size-1;
7
8     int mid;
9     int t;
10    printf("Enter the target to find in the array:");
11    scanf("%d",&t);
12    while (st!=end){
13        int s=st+end;
14        if (s%2==0){
15            mid=s/2;
16        }
17        else {
18            mid=(s+1)/2;
19        }
20        if (t<a[mid]){
21            end=mid-1;
22        }
23        else if (t>a[mid]){
24            st=mid+1;
25        }
26        else if(t==a[mid]){
27            printf("The target is at index %d",mid);
28            break;
29        }
30        else {
31            printf("The target is invalid");

```

```
else {
    printf("The target is invalid");
    break;
}
}
if (st==end){
    printf("the target is at index %d",st);
}
return 0;
}
```

OUTPUT

```
Program to implement binary search
Enter the target to find in the array:6
The target is at index 3
```

CODE 106-

```
aayush > C bubble_sort.c > ⚙ main()
1   #include<stdio.h>
2   int main(){
3       printf("Program to implement bubble sort\n");
4       int a[5]={11,3,32,67,12};
5       int size=sizeof(a)/sizeof(a[0]);
6       int n=size;
7       for (int i=0;i<size-1;i++){
8           for (int j=0;j<size-1-i;j++){
9               if (a[j]>a[j+1]){
10                   int b=a[j];
11                   a[j]=a[j+1];
12                   a[j+1]=b;
13                   continue;
14               }
15               else {
16                   continue;
17               }
18           }
19       }
20       for (int i=0;i<size;i++){
21           printf("%d ",a[i]);
22       }
23       return 0;
24   }
```

OUTPUT

```
Program to implement bubble sort
3 11 12 32 67
```

CODE 107-

```
aayush > C insertion_sort.c > ⚙ main()
1 #include<stdio.h>
2 int main(){
3     printf("Program to implement insertion sort\n");
4     int a[5]={11,3,32,67,12};
5     int size=sizeof(a)/sizeof(a[0]);
6     int n=size;
7     for (int i=0;i<size-1;i++){
8         for (int j=1;j<size-i;j++){
9             if (a[j]<a[j-1]){
10                 int b=a[j];
11                 a[j]=a[j-1];
12                 a[j-1]=b;
13                 continue;
14             }
15             else {
16                 continue;
17             }
18         }
19     }
20     for (int i=0;i<size;i++){
21         printf("%d ",a[i]);
22     }
23 }
24 return 0;
25 }
```

OUTPUT

```
Program to implement insertion sort
3 11 12 32 67
```

CODE 108-

```
aayush > C selection_sort.c > ⚙ main()
1 #include<stdio.h>
2 int main(){
3     printf("Program to implement selection sort\n");
4     int a[7]={1,23,1,534,54,32,78};
5     int size=sizeof(a)/sizeof(a[0]);
6     int m;
7     int n=0;
8     for (int i=0;i<size;i++){
9         for (int j=i+1;j<size;j++){
10            if (a[i]<a[j]){
11                continue;
12            }
13            else {
14                int b=a[i];
15                a[i]=a[j];
16                a[j]=b;
17                continue;
18            }
19        n++;
20    }
21 }
22 for (int i=0;i<size;i++){
23     printf("%d ",a[i]);
24 }
25 return 0;
26 }
```

OUTPUT

```
Program to implement selection sort
```

```
1 1 23 32 54 78 534
```

CODE 109-

```
arraysbook.c > C 86.c > main()
1 #include<stdio.h>
2 int main(){
3     printf("Program to merge two sorted arrays\n");
4     int A[5]={1,4,6,7,23};
5     int B[5]={2,4,23,65,34};
6     int c[10];
7     for (int i=0;i<5;i++){
8         c[i]=A[i];
9     }
10    for (int i=5;i<10;i++){
11        c[i]=B[i-5];
12    }
13    for (int i=1;i<10;i++){
14        if (c[i]>=c[i-1]){
15            continue;
16        }
17        else if (c[i]<c[i-1]){
18            int b=c[i];
19            c[i]=c[i-1];
20            c[i-1]=b;
21            i=1;
22        }
23    }
24    for (int i=0;i<10;i++){
25        printf("%d ",c[i]);
26    }
27    return 0;
28 }
29 }
```

OUTPUT

Program to merge two sorted arrays

1 2 4 4 6 7 23 23 34 65

CODE 110-

```
assignment > C 110.c > ...
1  #include <stdio.h>
2
3  int main() {
4      printf("Program to print prime numbers from 1 to 100\n");
5
6      int num[101] = {0};
7      for (int i = 2; i * i <= 100; i++) {
8          if (num[i] == 0) {
9              for (int j = i * i; j <= 100; j += i) {
10                  num[j] = 1;
11              }
12          }
13      }
14      for (int i = 2; i <= 100; i++) {
15          if (num[i] == 0) {
16              printf("%d ", i);
17          }
18      }
19
20      return 0;
21  }
```

OUTPUT

```
Program to print prime numbers from 1 to 100
2 3 5 7 11 13 17 19 23 29 31 37 41 43 47 53 59 61 67 71 73 79 83 89 97
```

CODE 111-

```
#include <stdio.h>
int main() {
    int original_array[] = {1, 2, 3, 4, 5};
    int size = sizeof(original_array) / sizeof(original_array[0]);

    int reversed_array[size];

    for (int i = 0; i < size; i++) {
        reversed_array[i] = original_array[size - 1 - i];
    }
    printf("Original Array: ");
    for (int i = 0; i < size; i++) {
        printf("%d ", original_array[i]);
    }
    printf("\nReversed Array: ");
    for (int i = 0; i < size; i++) {
        printf("%d ", reversed_array[i]);
    }

    return 0;
}
```

OUTPUT

```
Original Array: 1 2 3 4 5
Reversed Array: 5 4 3 2 1
```

CODE 112-

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

int main() {
    int arr[] = {1, 2, 3, 2, 1};
    int n = sizeof(arr) / sizeof(arr[0]);

    bool is_symmetric = true;

    for (int i = 0; i < n / 2; i++) {
        if (arr[i] != arr[n - 1 - i]) {
            is_symmetric = false;
            break;
        }
    }
    if (is_symmetric) {
        printf("The array satisfies the condition.\n");
    } else {
        printf("The array does not satisfy the condition.\n");
    }

    return 0;
}
```

OUTPUT

```
The array satisfies the condition.
```

CODE 113-

```
#include <stdio.h>
int main() {
    int arr[] = {12, 45, 2, 10, 5};
    int n = sizeof(arr) / sizeof(arr[0]);

    int *ptr = arr;

    int smallest = *ptr;

    for (int i = 1; i < n; i++) {
        ptr++;
        if (*ptr < smallest) {
            smallest = *ptr;
        }
    }
    printf("The smallest number in the array is: %d\n", smallest);

    return 0;
}
```

OUTPUT

```
The smallest number in the array is: 2
```

CODE 115-

```
#include <stdio.h>

int main() {

    int matrix[5][5] = {{3, 8, 1, 9, 4}, {2, 10, 5, 6, 7}, {12, 14, 11, 13, 16}, {18, 17, 19, 20, 15}, {21, 23, 22, 24, 25}};
    int largest = matrix[0][0];
    for (int i = 0; i < 5; i++) {
        for (int j = 0; j < 5; j++) {
            if (matrix[i][j] > largest) {
                largest = matrix[i][j];
            }
        }
    }
    printf("The largest number in the matrix is: %d\n", largest);

    return 0;
}
```

OUTPUT

```
The largest number in the matrix is: 25
```

CODE 116-

```
#include <stdio.h>

int main() {
    int matrix[4][4] = {{1, 2, 3, 4}, {5, 6, 7, 8}, {9, 10, 11, 12}, {13, 14, 15, 16}};
    int transpose[4][4];

    for (int i = 0; i < 4; i++) {
        for (int j = 0; j < 4; j++) {
            transpose[j][i] = matrix[i][j];
        }
    }
    printf("Original Matrix:\n");
    for (int i = 0; i < 4; i++) {
        for (int j = 0; j < 4; j++) {
            printf("%d ", matrix[i][j]);
        }
        printf("\n");
    }
    printf("\nTransposed Matrix:\n");
    for (int i = 0; i < 4; i++) {
        for (int j = 0; j < 4; j++) {
            printf("%d ", transpose[i][j]);
        }
        printf("\n");
    }

    return 0;
}
```

OUTPUT

Original Matrix:

1 2 3 4
5 6 7 8
9 10 11 12
13 14 15 16

Transposed Matrix:

1 5 9 13
2 6 10 14
3 7 11 15
4 8 12 16

CODE 117-

```
c q117.c > sortMatrix(int [SIZE][SIZE])
1  #include <stdio.h>
2  #define SIZE 4
3  void sortMatrix(int matrix[SIZE][SIZE]) {
4      int temp[SIZE * SIZE];
5      int k = 0;
6      for (int i = 0; i < SIZE; i++) {
7          for (int j = 0; j < SIZE; j++) {
8              temp[k++] = matrix[i][j];
9          }
10     }
11     for (int i = 0; i < SIZE * SIZE - 1; i++) {
12         for (int j = i + 1; j < SIZE * SIZE; j++) {
13             if (temp[i] > temp[j]) {
14                 int swap = temp[i];
15                 temp[i] = temp[j];
16                 temp[j] = swap;
17             }
18         }
19     }
20     k = 0;
21     for (int i = 0; i < SIZE; i++) {
22         for (int j = 0; j < SIZE; j++) {
23             matrix[i][j] = temp[k++];
24         }
25     }
26 }
27 void printMatrix(int matrix[SIZE][SIZE]) {
28     for (int i = 0; i < SIZE; i++) {
29         for (int j = 0; j < SIZE; j++) {
30             printf("%d ", matrix[i][j]);
31         }
32         printf("\n");
33     }
34 }
35 int main() {
36     int matrix[SIZE][SIZE] = {
37         {101, 112, 113, 104},
38         {115, 110, 102, 108},
39         {109, 107, 106, 103},
40         {116, 114, 105, 111}
41     };
42     printf("Original Matrix:\n");
43     printMatrix(matrix);
44     sortMatrix(matrix);
45     printf("\nSorted Matrix:\n");
46     printMatrix(matrix);
47     return 0;
48 }
```

OUTPUT

```
Original Matrix:  
101 112 113 104  
115 110 102 108  
109 107 106 103  
116 114 105 111  
  
Sorted Matrix:  
101 102 103 104  
105 106 107 108  
109 110 111 112  
113 114 115 116
```

CODE 118-

```
C Q118.c > main()
1  #include <stdio.h>
2  #include <math.h>
3
4  int main() {
5
6      float x[10], y[10];
7      float totalDistance = 0;
8      printf("Enter the X and Y coordinates of 10 points:\n");
9      for (int i = 0; i < 10; i++) {
10          printf("Point %d (X Y): ", i + 1);
11          scanf("%f %f", &x[i], &y[i]);
12      }
13      for (int i = 0; i < 9; i++) {
14          float dx = x[i + 1] - x[i];
15          float dy = y[i + 1] - y[i];
16          totalDistance += sqrt(dx * dx + dy * dy);
17      }
18      printf("Total distance from the first point to the last point: %.2f\n", totalDistance);
19
20      return 0;
21  }
```

OUTPUT-

```
Enter the X and Y coordinates of 10 points:
Point 1 (X Y): 2 3
Point 2 (X Y): 4 7
Point 3 (X Y): 8 5
Point 4 (X Y): 3 9
Point 5 (X Y): 0 0
Point 6 (X Y): 2 1
Point 7 (X Y): 6 8
Point 8 (X Y): 9 6
Point 9 (X Y): 6 6
Point 10 (X Y): 5 5
Total distance from the first point to the last point: 43.15
```

CODE 119-

```
C q119.c > main()
1  #include <stdio.h>
2  #define N 15
3
4  void calculateDifference(int input[], int output[], int size) {
5      for (int i = 0; i < size - 1; i++) {
6          output[i] = input[i + 1] - input[i];
7      }
8  }
9  void printArray(int array[], int size) {
10     for (int i = 0; i < size; i++) {
11         printf("%d ", array[i]);
12     }
13     printf("\n");
14 }
15 int main() {
16     int A[N], D1[N - 1], D2[N - 2], D3[N - 3];
17     printf("Enter %d elements of the sequence:\n", N);
18     for (int i = 0; i < N; i++) {
19         scanf("%d", &A[i]);
20     }
21     calculateDifference(A, D1, N);
22
23     calculateDifference(D1, D2, N - 1);
24     calculateDifference(D2, D3, N - 2);
25     printf("\nOriginal Sequence (A):\n");
26     printArray(A, N);
27
28     printf("\nFirst Difference (D1):\n");
29     printArray(D1, N - 1);
30
31     printf("\nSecond Difference (D2):\n");
32     printArray(D2, N - 2);
33
34     printf("\nThird Difference (D3):\n");
35     printArray(D3, N - 3);
36
37     return 0;
38 }
```

OUTPUT –

```
0 1 3 6 10 15 21 28 36 45 55 66 78 91 105
```

```
First Difference (D1):
```

```
1 2 3 4 5 6 7 8 9 10 11 12 13 14
```

```
Second Difference (D2):
```

```
1 1 1 1 1 1 1 1 1 1 1 1 1 1
```

```
Third Difference (D3):
```

```
0 0 0 0 0 0 0 0 0 0 0 0 0 0
```

CODE 120-

```
C q120.c > MAX_VALUE
1 #include <stdio.h>
2 #define SIZE 50
3 #define MAX_VALUE 25
4
5 int main() {
6     int data[SIZE];
7     int frequency[MAX_VALUE + 1] = {0};
8     printf("Enter %d integers (1 to %d):\n", SIZE, MAX_VALUE);
9     for (int i = 0; i < SIZE; i++) {
10         scanf("%d", &data[i]);
11         if (data[i] < 1 || data[i] > MAX_VALUE) {
12             printf("Invalid input. Please enter a number between 1 and %d.\n", MAX_VALUE);
13             i--;
14         }
15     }
16     for (int i = 0; i < SIZE; i++) {
17         frequency[data[i]]++;
18     }
19     printf("\nFrequency Distribution:\n");
20     for (int i = 1; i <= MAX_VALUE; i++) {
21         printf("%d: %d\n", i, frequency[i]);
22     }
23 }
```

OUTPUT –

```
Enter 50 integers (1 to 25):
1 2 3 5 6 8 9 0 5 4 11 23 25 23 14 19 10 23 12 17 17 12 3 12 17 18 11 16 23 22 22 20 21 23 9 4 6 4 2 4 6 7 5 3 17 19 10 13 13 17 15 3 4 7 8 9 6 3 2
Invalid input. Please enter a number between 1 and 25.

Frequency Distribution:
1: 1
2: 2
3: 3
4: 4
5: 3
6: 3
7: 1
8: 1
9: 2
10: 2
11: 2
12: 3
13: 2
14: 1
15: 1
16: 1
17: 5
18: 1
19: 2
20: 1
21: 1
22: 2
23: 5
24: 0
25: 1
```

CODE 121-

```
C q121.c > main()
1  #include <stdio.h>
2
3  int main() {
4      int n;
5      printf("Enter the size of the square matrix (n): ");
6      scanf("%d", &n);
7
8      int matrix[n][n];
9      int isDiagonal = 1, isUpperTriangular = 1, isLowerTriangular = 1;
10     printf("Enter the elements of the %dx%d matrix:\n", n, n);
11     for (int i = 0; i < n; i++) {
12         for (int j = 0; j < n; j++) {
13             scanf("%d", &matrix[i][j]);
14         }
15     }
16
17     for (int i = 0; i < n; i++) []
18         for (int j = 0; j < n; j++) {
19             if (i != j && matrix[i][j] != 0) {
20
21                 isDiagonal = 0;
22             }
23             if (i > j && matrix[i][j] != 0) {
24
25                 isUpperTriangular = 0;
26             }
27             if (i < j && matrix[i][j] != 0) {
28
29                 isLowerTriangular = 0;
30             }
31         }
32     ]
33     if (isDiagonal) {
34         printf("The matrix is a diagonal matrix.\n");
35     } else if (isUpperTriangular) {
36         printf("The matrix is an upper triangular matrix.\n");
37     } else if (isLowerTriangular) {
38         printf("The matrix is a lower triangular matrix.\n");
39     } else {
40         printf("The matrix is none of these special types.\n");
41     }
42
43     return 0;
44 }
```

OUTPUT –

```
Enter the size of the square matrix (n): 4
Enter the elements of the 4x4 matrix:
0 0 0 0
1 0 0 0
2 3 0 0
4 5 6 0
The matrix is a lower triangular matrix.
```

CODE 122-

```
assignment > C test2.c > main()
1  #include <stdio.h>
2
3  int main() {
4      int SALES[5][10][7];
5      int chip_sales[5] = {0};
6      int city_sales[10] = {0};
7      int TS = 0;
8      float average_daily_sales;
9      printf("Enter the sales data (5 types x 10 cities x 7 days):\n");
10     for (int l = 0; l < 5; l++) {
11         for (int k = 0; k < 10; k++) {
12             for (int m = 0; m < 7; m++) {
13                 scanf("%d", &SALES[l][k][m]);
14             }
15         }
16     }
17     for (int l = 0; l < 5; l++) {
18         for (int k = 0; k < 10; k++) {
19             for (int m = 0; m < 7; m++) {
20                 chip_sales[l] += SALES[l][k][m];
21             }
22         }
23     }
24
25     for (int k = 0; k < 10; k++) {
26         for (int l = 0; l < 5; l++) {
27             for (int m = 0; m < 7; m++) {
28                 city_sales[k] += SALES[l][k][m];
29             }
30         }
31     }
32     for (int l = 0; l < 5; l++) {
33         TS += chip_sales[l];
34     }
35     average_daily_sales = TS / 7.0;
36
37     printf("\nTotal weekly sale of each type of memory chip:\n");
```

```

printf("\nTotal weekly sale of each type of memory chip:\n");
for (int l = 0; l < 5; l++) {
    printf("Memory Chip %d: %d\n", l + 1, chip_sales[l]);
}

printf("\nTotal weekly sale in each city:\n");
for (int k = 0; k < 10; k++) {
    printf("City %d: %d\n", k + 1, city_sales[k]);
}

printf("\nAverage daily sale of the company: %.2f\n", average_daily_sales);

return 0;
}

```

OUTPUT

Enter the sales data (5 types x 10 cities x 7 days):

```

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33
36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65
67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96
98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120
121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 14
144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 16
167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 18
190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 21
213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 23
236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 25
259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 28
282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 30

```

Total weekly sale of each type of memory chip:

Memory Chip 1: 2807

Memory Chip 2: 7287

Memory Chip 3: 11767

Memory Chip 4: 16247

Memory Chip 5: 20727

Total weekly sale in each city:

City 1: 4975

City 2: 5285

City 3: 5595

City 4: 5905

City 5: 6215

City 6: 6525

City 7: 6835

City 8: 7145

City 9: 7455

City 10: 7765

Average daily sale of the company: 2850.43

CODE 123-

```
C q123.c > main()
1 #include <stdio.h>
2
3 int stringLength(char str[]) {
4     int length = 0;
5
6
7     while (str[length] != '\0') {
8         length++;
9     }
10
11    return length;
12 }
13
14 int main() {
15     char str[100];
16
17
18     printf("Enter a string: ");
19     scanf("%[^\\n]", str);
20     int length = stringLength(str);
21     printf("The length of the string is: %d\\n", length);
22
23     return 0;
24 }
25
```

OUTPUT –

```
Enter a string: 23 23 2456 23 56 6 56
The length of the string is: 21
```

CODE 124-

```
C q124.c > main()
1  #include <stdio.h>
2  void toLowercase(char str[]) {
3      int i = 0;
4
5      while (str[i] != '\0') {
6
7          if (str[i] >= 'A' && str[i] <= 'Z') {
8
9              str[i] = str[i] + 32;
10
11         i++;
12     }
13 }
14
15 int main() {
16     char str[100];
17
18     printf("Enter a string: ");
19     scanf("%[^\\n]", str);
20
21     toLowercase(str);
22     printf("String in lowercase: %s\\n", str);
23
24     return 0;
25 }
26
```

OUTPUT –

```
Enter a string: HELLO IIITK!
String in lowercase: hello iiitk!
```

CODE 148 –

```
#include<stdio.h>
int main(){
    printf("Enter your name: ");
    char fname[100],mname[100],lname[100];
    scanf("%s %s %s", fname, mname, lname);
    printf("%c%c %s",fname[0],mname[0],lname );
    return 0;
}
```

OUTPUT –

```
Enter your name: Shaurya Singh Singh
SS Singh
```

CODE 149 –

```
#include<stdio.h>
#include<string.h>
int main(){
    int a,b;
    char word[20];
    printf("Enter a word: ");
    scanf("%s", &word);

    for(int i=0; word[i]!='\0'; i++){
        if((word[i]=='a' || word[i]=='e' || word[i]=='i' || word[i]=='o' || word[i]=='u') &&
           (word[i+1]=='a' || word[i+1]=='e' || word[i+1]=='i' || word[i+1]=='o' || word[i+1]=='u')){
            printf("%c%c", word[i], word[i+1]);
        }
    }
    return 0;
}
```

OUTPUT –

```
Enter a word: kallueeqwai
ueai
```

CODE 150 –

```
#include<stdio.h>
#include<string.h>
char decode(char any[]){
    char dany[20];
    int a;
    for(int i=0; any[i]!='\0'; i++){
        dany[i]=any[i]-1;
        a=i;
    }
    dany[a+1]='\0';
    printf("%s", dany);
    return 0;
}
int main(){
    int a;
    char word[20],eword[20];
    printf("Enter a word to to encoded: ");
    scanf("%s", word);
    int l=strlen(word);
    for(int i=0; word[i]!='\0'; i++){
        eword[i]=word[i]+1;
        a=i;
    }
    eword[a+1]='\0';
    printf("%s\n", eword);
    printf("Decoded: ");
    decode(eword);
    return 0;
}
```

OUTPUT –

```
Enter a word to to encoded: shawty
tibxuz
Decoded: shawty
```

**THANK
YOU**

Made by :- Ayush Mittal