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**MCA\_B\_13\_Vishal**

**C Programs:**

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| **C Program List: [From C\_Programs\_List.pdf]**  // 1. Write a program to print “Hello World” message.  #include<stdio.h>  #include<conio.h>  int main(){     clrscr();     printf("Hello World!");     getch();     return 0;  }  **Output:**  Hello World!  // 2. Write a program to print Name, Address and Birth Date.  #include<stdio.h>  #include<conio.h>  int main() {     clrscr();     printf("\n\tName \t\t: Vishal");     printf("\n\tAddress \t: Dwarka - 361306");     printf("\n\tBirth Date \t: 18/12/2002");     getch();     return 0;  }  **Output:**  Name : Vishal  Address : Dwarka - 361306  Birth Date : 18/12/2002  // 3. Write a program to add, multiply and divide two integers and float numbers.  #include<stdio.h>  #include<conio.h>  int main() {     int a, b;     float c, d;     clrscr();     //a = 10;     //b = 20;     //c = 30.30f;     //d = 40.40f;     printf("\n\tEnter first integer number : ");     scanf("%d", &a);     printf("\n\tEnter second integer number : ");     scanf("%d", &b);     printf("\n\tFor Integer Number\n");     printf("\n\t%d + %d = %d", a, b, a + b);     printf("\n\t%d - %d = %d", a, b, a - b);     printf("\n\t%d \* %d = %d", a, b, a \* b);     printf("\n\t%d / %d = %d", a, b, a / b);     printf("\n\n\tEnter first float number : ");     scanf("%f", &c);     printf("\n\tEnter second float number : ");     scanf("%f", &d);     printf("\n\n\tFor Floting Number\n");     printf("\n\t%f + %f = %f", c, d, c + d);     printf("\n\t%f - %f = %f", c, d, c - d);     printf("\n\t%f \* %f = %f", c, d, c \* d);     printf("\n\t%f / %f = %f", c, d, c / d);     getch();     return 0;  }  **Output:**  Enter first integer number : 12  Enter second integer number : 10  For Integer Number  12 + 10 = 22  12 - 10 = 2  12 \* 10 = 120  12 / 10 = 1  Enter first float number : 12.10  Enter second float number : 12.12  For Floting Number  12.100000 + 12.120000 = 24.220000  12.100000 - 12.120000 = -0.020000  12.100000 \* 12.120000 = 146.652003  12.100000 / 12.120000 = 0.998350  // 4. Write a program to find area of a rectangle.(Area=l\*b)  #include<stdio.h>  #include<conio.h>  int main() {     float l, b, area;     clrscr();     printf("\n\tEnter length of reactangle : ");     scanf("%f", &l);     printf("\n\tEnter breadth of reactangle : ");     scanf("%f", &b);     area = l \* b;     printf("\n\n\tArea of Rectangle : %.2f", area);     getch();     return 0;  }  **Output:**  Enter length of reactangle : 12  Enter breadth of reactangle : 13  Area of Rectangle : 156.00  // 5. Write a program to find volume of cube.(Area=l\*b\*h)  #include<stdio.h>  #include<conio.h>  int main() {     float l, b, h, area;     clrscr();     printf("\n\tEnter length of cude : ");     scanf("%f", &l);     printf("\n\tEnter breadth of cude : ");     scanf("%f", &b);     printf("\n\tEnter height of cude : ");     scanf("%f", &h);     area = l \* b \* h;     printf("\n\n\tarea of cube is : %.2f", area);     getch();     return 0;  }  **Output:**  Enter length of cude : 12  Enter breadth of cude : 23  Enter height of cude : 21  area of cube is : 5796.00  // 6. Write a program to find area of triangle.(Area=(l\*b)/2)  #include<stdio.h>  #include<conio.h>  int main() {     float l, b, area;     clrscr();     printf("\n\tEnter length of triangle : ");     scanf("%f", &l);     printf("\n\tEnter breadth of triangle : ");     scanf("%f", &b);     area = (l \* b) / 2.0;     printf("\n\tarea of triangle is : %.2f", area);     getch();     return 0;  }  **Output:**  Enter length of triangle : 12  Enter breadth of triangle : 10  area of triangle is : 60.00  // 7. Write a program in C to convert the given temperature from Fahrenheit to Celsius using the formula C = (F – 32) / 1.8  #include<stdio.h>  #include<conio.h>  int main() {     float f, c;     clrscr();     printf("\n\tEnter tempereture in fahrenhit : ");     scanf("%f", &f);     c = (f - 32) / 1.8;     printf("\n\tTempereture in Celsius is %.2f", c);     getch();     return 0;  }  **Output:**  Enter tempereture in fahrenhit : 152  Tempereture in Celsius is 66.67  // 8. Write a program convert temperature from Celsius to Fahrenheit where temperature in Celsius is entered by user.(C = 5/9 (f – 32))  #include<stdio.h>  #include<conio.h>  int main() {     float f, c;     clrscr();     printf("\n\tEnter tempereture in celsius : ");     scanf("%f", &c);     f = (c \* 9 / 5) + 32;     printf("\n\tTempereture in Fahrenheit is %.2f", f);     getch();     return 0;  }  **Output:**  Enter tempereture in celsius : 35  Tempereture in Fahrenheit is 95.00  // 9. Write a program to calculate area of circle.(pi\*r\*r)  #include<stdio.h>  #include<conio.h>  #define PI 3.14  int main() {     float r, area;     clrscr();     printf("Enter circle radius : ");     scanf("%f", &r);     area = PI \* r \* r;     printf("circle area is : %.2f", area);     getch();     return 0;  }  **Output:**  Enter circle radius : 12  circle area is : 452.16  // 10. Write a program in C to find the Circumference of a circle.(2\*pi\*r)  #include<stdio.h>  #include<conio.h>  #define PI 3.14  int main() {     float r, area;     clrscr();     printf("Enter circle radius : ");     scanf("%f", &r);     area = PI \* r \* 2;     printf("circumference circle is : %.2f", area);     getch();     return 0;  }  **Output:**  Enter circle radius : 12  circumference circle is : 75.36  // 11. Write a program in C to calculate simple interest using formula SI = (P\*R\*N) / 100.  #include<stdio.h>  #include<conio.h>  int main() {     float p, r, si;     int n;     clrscr();     printf("\n\tEnter principal amount : ");     scanf("%f", &p);     printf("\n\tEnter rate of interest per year : ");     scanf("%f", &r);     printf("\n\tEnter time period in years : ");     scanf("%d", &n);     si = (p \* r \* n) / 100;     printf("\n\tsimple interest is : %.2f", si);     getch();     return 0;  }  **Output:**  Enter principal amount : 12300  Enter rate of interest per year : 123  Enter time period in years : 45  simple interest is : 680805.00  // 12. Write a program in C to display sum from 1 to N using the formula N(N+1)/2.  #include<stdio.h>  #include<conio.h>  long int nsum(long int);  int main() {     long int n;     clrscr();     printf("\n\tEnter nth number: ");     scanf("%ld", &n);     printf("\n\t Sum of 1 to %ld number is %ld", n, nsum(n));     getch();     return 0;  }  long int nsum(long int n) {     return n \* (n + 1) / 2;  }  **Output:**  Enter nth number: 12  Sum of 1 to 12 number is 78  // 13. Write a program that reads the radius of sphere “r”, then it calculates its volume “V” and surface area “A” using formulas. (pi\*r\*r\*4)/3  #include<stdio.h>  #include<conio.h>  #define PI 3.14  float volume(float);  float area(float);  int main() {     float r;     clrscr();     printf("\n\tEnter Radius or Sphere: ");     scanf("%f", &r);     printf("\n\tVolume of Sphere is %.2f", volume(r));     printf("\n\tArea of Sphere is %.2f", area(r));     getch();     return 0;  }  float volume(float r) {     return (4 / 3) \* PI \* r \* r \* r;  }  float area(float r) {     return 4 \* PI \* r \* r;  }  **Output:**  Enter Radius or Sphere: 12  Volume of Sphere is 5425.92  Area of Sphere is 1808.64  // 14. Write a C program to obtain an hourly pay rate and the number of hours worked by workers. Calculate their pay for the week.  #include<stdio.h>  #include<conio.h>  long payForWeek(int, int);  int main() {     int rate, time;     clrscr();     printf("\n\tEnter Hourly pay rate: ");     scanf("%d", &rate);     printf("\n\tEnter number of hours: ");     scanf("%d", &time);     printf("\n\tPay for the week is %ld", payForWeek(rate, time));     getch();     return 0;  }  long payForWeek(int rate, int time) {     return 7 \* rate \* time;  }  **Output:**  Enter Hourly pay rate: 12  Enter number of hours: 10  Pay for the week is 840  // 15. Write a C program to find out the area of right angle triangle using formula area = ½ \* base \* height.  #include<stdio.h>  #include<conio.h>  float area(float, float);  int main() {     float base, height;     clrscr();     printf("\n\tEnter base of right angle triangle: ");     scanf("%f", &base);     printf("\n\tEnter height of right angle triangle: ");     scanf("%f", &height);     printf("\n\tArea of right angle triangle is %.2f", area(base, height));     getch();     return 0;  }  float area(float base, float height) {     return (1.5 \* base \* height);  }  **Output:**  Enter base of right angle triangle: 12  Enter height of right angle triangle: 15  Area of right angle triangle is 270.00  // 16. Write a C program to find out compound interest using following formula Compound Interest = P \* ( 1 + r / 100 ) n - P.  #include<stdio.h>  #include<conio.h>  #include<math.h>  float interest(long, int, int);  int main() {     int r, n;     long p;     clrscr();     printf("\n\tEnter Principal amount: ");     scanf("%ld", &p);     printf("\n\tEnter rate of interest: ");     scanf("%d", &r);     printf("\n\tEnter time per year: ");     scanf("%d", &n);     printf("\n\tCompound interest is %.2f", interest(p, r, n));     getch();     return 0;  }  float interest(long p, int r, int n) {     float a = p \* pow((1 + r / 100.0), n);     //printf("%f", a);     return a - p;  }  **Output:**  Enter Principal amount: 1200  Enter rate of interest: 5  Enter time per year: 12  Compound interest is 955.03  // 17. Write a C program to read a floating point number from user and then display the right most digit of the integral part of the number.  #include<stdio.h>  #include<conio.h>  int main() {     float n;     clrscr();     printf("\n\tEnter floting number: ");     scanf("%f", &n);     printf("\n\tIngeral part is %d", (int)n);     getch();     return 0;  }  **Output:**  Enter floting number: 12.123  Ingeral part is 12  // 18. Write a C program to read the distance between two cities in KM. and print that distance in meters, feet, inches and centimeters.  #include<stdio.h>  #include<conio.h>  float kmtom(float);  float kmtoft(float);  float kmtoin(float);  float kmtocm(float);  int main() {     float km;     clrscr();     printf("\n\tEnter distance between two cities in km: ");     scanf("%f", &km);     printf("\n\t%.2f km = %.2f meters", km, kmtom(km));     printf("\n\t%.2f km = %.2f feet", km, kmtoft(km));     printf("\n\t%.2f km = %.2f inches", km, kmtoin(km));     printf("\n\t%.2f km = %.2f centimeters", km, kmtocm(km));     getch();     return 0;  }  float kmtom(float km) { return (1000 \* km); }  float kmtocm(float km) { return (100000 \* km); }  float kmtoft(float km) { return (3280.84 \* km); }  float kmtoin(float km) { return (39370.1 \* km); }  **Output:**  Enter distance between two cities in km: 45  45.00 km = 45000.00 meters  45.00 km = 147637.80 feet  45.00 km = 1771654.50 inches  45.00 km = 4500000.00 centimeters  // 19. Write a C program to convert angle in degrees to radians using formula angle in radians = (angle in degrees \* ∏) / 180.  #include<stdio.h>  #include<conio.h>  #define PI 3.14  float dtor(float);  int main() {     float d;     clrscr();     printf("\n\tEnter degrees: ");     scanf("%f", &d);     printf("\n\t%.2f degrees = %.2f radians", d, dtor(d));     getch();     return 0;  }  float dtor(float d) {     return (d \* PI) / 180.0;  }  **Output:**  Enter degrees: 12  12.00 degrees = 0.21 radians  /\* 20. Write a program to accept number of days and print year, month and remaining days. \*/  #include<stdio.h>  #include<conio.h>  void day\_to\_year\_month(int);  int main() {     int n = 0;     // clrscr();     printf("\n\tEnter number of days: ");     scanf("%d", &n);     day\_to\_year\_month(n);     // getch();     return 0;  }  void day\_to\_year\_month(int n) {     int y, m;     if (n >= 356) {        y = n / 365;        n = n % 365;        printf("\n\t %d Year", y);     }     if (n >= 30) {        m = n / 30;        n = n % 30;        printf("\n\t %d Month", m);     }     printf("\n\t %d Remaining days", n);  }  **Output:**  Enter number of days: 400  1 Year  1 Month  5 Remaining days  /\* 21. Write a C program to read a price of an item in (float) like 10.25 and print output in  (int) paisa like1025. \*/  #include<stdio.h>  #include<conio.h>  #include<string.h>  int remove\_point(float);  int paisa(float);  int main() {     float n = 0;     // clrscr();     printf("\n\tEnter floating point number: ");     scanf("%f", &n);     printf("\n\tAnswer: %d", paisa(n));     printf("\n\tAnswer: %d", remove\_point(n)); // perfect work in only after point 6 digit if enter more digit than that not showing     // getch();     return 0;  }  int paisa(float n) {     return n \* 100;  }  int remove\_point(float n) {     char str[100];     int a, c = 0, i = 0;     float b;     sprintf(str, "%f", n); // convert float to string, after point not 6 digit than add 0 it self     printf("\n%s", str);     while (str[i] != '\0') {        if (str[i] >= '0' && str[i] <= '9') {           a = n;           b = n - a;           n = b \* 10;           c = (c \* 10) + a;        }        i++;     }     return c;  }  **Output:**  Enter floating point number: 10.25  Answer: 1025  10.250000  Answer: 102500000  /\* 22. Write a C program to read number and display in the form of Hour, Min and Seconds. \*/  #include <stdio.h>  #include <conio.h>  int main() {     int ts, m, h, s;     // clrscr();     printf("\n\tSeconds to minits and hours");     printf("\n\tEnter seconds: ");     scanf("%d", &ts);     s = ts;     h = s / 3600;     s = s % 3600;     m = s / 60;     s = s % 60;     printf("\n\t%d Seconds = %d Hour : %d Minits : %d Seconds", ts, h, m, s);     // getch();     return 0;  }  **Output:**  Seconds to minits and hours  Enter seconds: 18240  18240 Seconds = 5 Hour : 4 Minits : 0 Seconds  /\* 23. Write a program to Find out Maximum number among two numbers. \*/  #include<stdio.h>  #include<conio.h>  int find\_max(int, int);  int main() {     int n1, n2;     // clrscr();     printf("\n\tEnter number 1: ");     scanf("%d", &n1);     printf("\n\tEnter number 2: ");     scanf("%d", &n2);     printf("\n\tMaximum value is: %d", find\_max(n1, n2));     // getch();     return 0;  }  int find\_max(int a, int b) {     if (a > b)        return a;     else        return b;  }  **Output:**  Enter number 1: 1  Enter number 2: 3  Maximum value is: 3  /\* 24. Write a program to Check whether given number is positive, negative or zero. \*/  #include<stdio.h>  #include<conio.h>  int main() {     int n;     // clrscr();     printf("\n\tEnter number: ");     scanf("%d", &n);     if (n > 0) {        printf("\n\t Number is positive");     }     else if (n < 0) {        printf("\n\t Number is negative");     }     else {        printf("\n\t Number is size");     }     // getch();     return 0;  }  **Output:**  Enter number: -2  Number is negative  /\* 25. Write a program to arrange any three numbers in ascending order. \*/  #include<stdio.h>  #include<conio.h>  int main() {     int n1, n2, n3;     // clrscr();     printf("\n\tEnter number (ex. 1 2 3): ");     scanf("%d %d %d", &n1, &n2, &n3);     if (n1 < n2) {        if (n2 < n3) {           printf("\n\t Ascending order: %d %d %d", n1, n2, n3);        }        else if (n1 < n3) {           printf("\n\t Ascending order: %d %d %d", n1, n3, n2);        }        else {           printf("\n\t Ascending order: %d %d %d", n3, n1, n2);        }     }     else {        if (n1 < n3) {           printf("\n\t Ascending order: %d %d %d", n2, n1, n3);        }        else if (n2 < n3) {           printf("\n\t Ascending order: %d %d %d", n2, n3, n1);        }        else {           printf("\n\t Ascending order: %d %d %d", n3, n2, n1);        }     }     // getch();     return 0;  }  **Output:**  Enter number (ex. 1 2 3): 1 4 2  Ascending order: 1 2 4  /\* 26. Write a program to Find out given year which is leap or not. \*/  #include<stdio.h>  #include<conio.h>  int isLeapYear(int);  int main() {     int year;     // clrscr();     printf("\n\tEnter year: ");     scanf("%d", &year);     if (isLeapYear(year)) {        printf("\n\t%d is a leap year.", year);     }     else {        printf("\n\t%d is not a leap year.", year);     }     // getch();     return 0;  }  int isLeapYear(int year) {     return (year % 4 == 0 && year % 100 != 0) || (year % 400 == 0);  }  **Output:**  Enter year: 2025  2025 is not a leap year.  /\* 27. Write a program in C to enter any arithmetic operator (+ - \* /) and two integer values  and display result according to selection of operator. \*/  #include<stdio.h>  #include<conio.h>  int main() {     int n1, n2;     char op;     float result;     // clrscr();     printf("\n\tEnter number 1: ");     scanf("%d", &n1);     printf("\n\tEnter number 2: ");     scanf("%d", &n2);     printf("\n\tEnter operator (+ - \* /): ");     scanf(" %c", &op);     switch (op) {     case '+':   printf("\n\tResult: %.2f", n1 + n2);   break;     case '-':   printf("\n\tResult: %.2f", n1 - n2);   break;     case '\*':   printf("\n\tResult: %.2f", n1 \* n2);   break;     case '/': {        if (n2 != 0) {           printf("\n\tResult: %.2f", n1 / n2);        }        else {           printf("\n\tDivision by zero is not allowed.");        }        break;     }     default:    printf("\n\tInvalid operator.");     }     // getch();     return 0;  }  **Output:**  Enter number 1: 12  Enter number 2: 18  Enter operator (+ - \* /): +  Result: 30.00  /\* 28. Write a program that read a number from 1 TO 7 and then print corresponding day  name from the week using switch-case. \*/  #include<stdio.h>  #include<conio.h>  void dayName(int day);  int main() {     int day;     // clrscr();     printf("\n\tEnter day number (1 to 7): ");     scanf("%d", &day);     dayName(day);     // getch();     return 0;  }  void dayName(int day) {     switch (day) {     case 1:  printf("\n\tDay is Sunday");  break;     case 2:  printf("\n\tDay is Monday");  break;     case 3:  printf("\n\tDay is Tuesday"); break;     case 4:  printf("\n\tDay is Wednesday");  break;     case 5:  printf("\n\tDay is Thursday");   break;     case 6:  printf("\n\tDay is Friday");  break;     case 7:  printf("\n\tDay is Saturday");   break;     default: printf("\n\tInvalid day number. Please enter a number between 1 and 7.");     }  }  **Output:**  Enter day number (1 to 7): 5  Day is Thursday  /\* 29. Write a program to enter 4 digit numbers from user and display it in string.  e.g.  Input : 1234  output : One Two Three Four. \*/  #include<stdio.h>  #include<conio.h>  #include<math.h>  void printDigitInWords(int);  int main() {     int num;     // clrscr();     printf("\n\tEnter a 4-digit number: ");     scanf("%d", &num);     printDigitInWords(num);     // getch();     return 0;  }  void printDigitInWords(int num) {     int rem, reverse = 0;     while (num > 0) {        rem = num % 10;        reverse = reverse \* 10 + rem;        num = num / 10;     }     printf("\n\tNumber in words: ");     while (reverse > 0) {        rem = reverse % 10;        switch (rem) {        case 0: printf("Zero "); break;        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;        }        reverse = reverse / 10;     }  }  **Output:**  Enter a 4-digit number: 1432  Number in words: One Four Three Two  /\* 41. Write a program to accept numbers from the user till their sum exceeds 50 \*/  #include<stdio.h>  #include<conio.h>  void exceed50();  int main() {     //clrscr();     exceed50();     //getch();     return 0;  }  void exceed50() {     int n, sum = 0;     do {        printf("\n\tEnter number: ");        scanf("%d", &n);        sum = sum + n;     } while (sum <= 50);     printf("\n\tYou are exceeds sum of 50!");  }  **Output:**  Enter number: 12  Enter number: 10  Enter number: 8  Enter number: 4  Enter number: 34  You are exceeds sum of 50!  /\* 42. Print first 50 odd numbers. Note that program should display only five numbers per line. \*/  #include<stdio.h>  #include<conio.h>  void first50Odd();  int main() {     //clrscr();     first50Odd();     //getch();     return 0;  }  void first50Odd() {     int i = 1, c = 0, v = 4;     while (c < 50) {        if (i % 2 != 0) {           printf("\t%d", i);           if (v == 0) {              printf("\n");              v = 5;           }           v--;           c++;        }        i++;     }  }  **Output:**  1 3 5 7 9  11 13 15 17 19  21 23 25 27 29  31 33 35 37 39  41 43 45 47 49  51 53 55 57 59  61 63 65 67 69  71 73 75 77 79  81 83 85 87 89  91 93 95 97 99  /\*43. Write a C program to read 4-digit number and print the sum of first and last digit of the number.\*/  #include<stdio.h>  #include<conio.h>  int firstAndLastSum(int);  int main() {     int n, sum;     //clrscr();     printf("\n\tEnter number: ");     scanf("%d", &n);     printf("\n\tFirst and last sum is %d", firstAndLastSum(n));     //getch();     return 0;  }  int firstAndLastSum(int n) {     int sum = 0, rem;     rem = n % 10; // first     sum = rem;     while (n > 0) {        rem = n % 10; // last        n = n / 10;     }     sum = sum + rem;     return sum;  }  **Output:**  Enter number: 1234  First and last sum is 5  /\* 44. Write a program to find sum of all digits of given number. \*/  #include<stdio.h>  #include<conio.h>  int digitSum(int);  int main() {     int n, sum;     //clrscr();     printf("\n\tEnter number: ");     scanf("%d", &n);     printf("\n\tSum of Digits is %d", digitSum(n));     //getch();     return 0;  }  int digitSum(int n) {     int sum = 0, rem;     while (n > 0) {        rem = n % 10;        sum = sum + rem;        n = n / 10;     }     return sum;  }  **Output:**  Enter number: 154  Sum of Digits is 10  /\* 45. Write a program to find reverse of a given number. \*/  #include<stdio.h>  #include<conio.h>  int reverse(int);  int main() {     int n, sum;     //clrscr();     printf("\n\tEnter number: ");     scanf("%d", &n);     printf("\n\tit's Reverse number is %d", reverse(n));     //getch();     return 0;  }  int reverse(int n) {     int rem, rev = 0;     while (n > 0) {        rem = n % 10;        rev = rem + (rev \* 10);        n = n / 10;     }     return rev;  }  **Output:**  Enter number: 1534  it's Reverse number is 4351  /\* 47. Write a program to find out and print all prime numbers lying between 1 to 200. \*/  #include<stdio.h>  #include<conio.h>  int prime(int);  void prime200();  int main() {     //clrscr();     // 1 == prime(14) ? printf("Yes") : printf("No"); // check it's prime number ?     prime200();     //getch();     return 0;  }  int prime(int n) {     int i = 2, p = 1;     while (i <= n / 2) {        if (n % i == 0) {           p = 0;        }        i++;     }     return p;  }  void prime200() {     int i = 2;     while (i < 200) {        if (1 == prime(i)) {           printf("\t%d", i);        }        i++;     }  }  **Output:**  2 3 5 7 11 13 17 19 23 29 31 37 41 43 47 53 59 61 67 7173 79 83 89 97 101 103 107 109 113 127 131 137 139 149 151 157 163 167 173 179 181 191 193 197 199  /\* 48 To check whether the given number is valid binary or not. \*/  #include<stdio.h>  #include<conio.h>  int isBinary(long int);  int main() {     long int binary;     //clrscr();     printf("\n\tEnter Binary number: ");     scanf("%ld", &binary);     1 == isBinary(binary) ? printf("\n\tYes, %ld is valid binary", binary) : printf("\n\tNo, %ld is not valid binary", binary);     //getch();     return 0;  }  int isBinary(long int binary) {     int flag = 1, rem;     while (binary > 0) {        rem = binary % 10;        if (rem == 0 || rem == 1)           flag = 1;        else           flag = 0;        if (flag == 0)           return flag;        binary = binary / 10;     }     return flag;  }  **Output:**  Enter Binary number: 10110001  Yes, 10110001 is valid binary  /\* 49 To check whether the given number is valid Octal or not. \*/  #include<stdio.h>  #include<conio.h>  int isOctal(long int);  int main() {     long int octal;     //clrscr();     printf("\n\tEnter Octal number: ");     scanf("%ld", &octal);     1 == isOctal(octal) ? printf("\n\tYes, %ld is valid octal", octal) : printf("\n\tNo, %ld is not valid octal", octal);     //getch();     return 0;  }  int isOctal(long int octal) {     int flag = 1, rem;     while (octal > 0) {        rem = octal % 10;        if (rem >= 0 && rem <= 7)           flag = 1;        else           flag = 0;        if (flag == 0)           return flag;        octal = octal / 10;     }     return flag;  }  **Output:**  Enter Octal number: 172  Yes, 172 is valid octal  /\* 50. Write a program generate Sum of two binary numbers. \*/  #include<stdio.h>  #include<conio.h>  int binaryToDecimal(long);  long decimalToBinary(int);  int main() {     long b1, b2;     //clrscr();     printf("\n\tEnter Decimal number: ");     scanf("%ld", &b1);     printf("\n\tEnter Decimal number: ");     scanf("%ld", &b2);     printf("\n\t%ld + %ld = %ld", b1, b2, decimalToBinary(binaryToDecimal(b1) + binaryToDecimal(b2)));     //getch();     return 0;  }  int binaryToDecimal(long binary) {     int decimal = 0, placeValue = 1, binary\_base = 2, last\_digit;     while (binary > 0) {        last\_digit = binary % 10;        binary /= 10;        decimal += last\_digit \* placeValue;        placeValue \*= binary\_base;     }     return decimal;  }  long decimalToBinary(int decimal) {     long binary = 0, placeValue = 1, decimal\_base = 10, last\_digit;     while (decimal > 0) {        last\_digit = decimal % 2;        decimal /= 2;        binary += last\_digit \* placeValue;        placeValue \*= decimal\_base;     }     return binary;  }  **Output:**  Enter Decimal number: 182  Enter Decimal number: 182  182 + 182 = 101100  /\* 51. To check whether the giver number is palindrome or not. \*/  #include<stdio.h>  #include<conio.h>  int reverse(int);  int main() {     int n;     //clrscr();     printf("\n\t\t\tcheck is palindrome\n");     printf("\n\tEnter number: ");     scanf("%d", &n); // ex. 121, 1221, 12321, 5445,...     n == reverse(n) ? printf("\n\tYes, This is palindrome number") : printf("\n\tNo, This is not palindrome number");     //getch();     return 0;  }  int reverse(int n) {     int rem, rev = 0;     while (n > 0) {        rem = n % 10;        rev = rem + (rev \* 10);        n = n / 10;     }     return rev;  }  **Output:**  check is palindrome  Enter number: 121  Yes, This is palindrome number  /\* 52. Write a program to Check whether number is Armstrong or not. \*/  #include<stdio.h>  #include<conio.h>  #include<math.h>  int armstrong(int);  int digitCount(int);  int main() {     int n;     //clrscr();     printf("\n\t\t\tCheck Armstrong number\n");     printf("\n\tEnter number: ");     scanf("%d", &n); // ex. 153     // printf("%d", armstrong(n));     n == armstrong(n) ? printf("\n\tYes, This is Armstrong number") : printf("\n\tNo, This is not Armstrong number");     //getch();     return 0;  }  int armstrong(int n) {     int rem, a = 0, c;     c = digitCount(n);     while (n > 0) {        rem = n % 10;        //printf("rem = %d, \tc = %d, \tpow = %f\n\n", rem, c, (float)pow(rem, c));        a = a + (pow(rem, c));        //printf("%d\n", a);        n = n / 10;     }     return a;  }  int digitCount(int n) {     int c = 0;     while (n > 0) {        c++;        n = n / 10;     }     return c;  }  **Output:**  Enter number: 153  Yes, This is Armstrong number  /\* 53. Write a program to check whether number is krishnamurti or not. \*/  #include<stdio.h>  #include<conio.h>  #include<math.h>  long krishnamurti(long);  long factorial(long);  int main() {     long n;     //clrscr();     printf("\n\t\t\tCheck Krishnamurti number\n");     printf("\n\tEnter number: ");     scanf("%ld", &n); // ex. 145     // printf("%d", krishnamurti(n));     n == krishnamurti(n) ? printf("\n\tYes, This is Krishnamurti number") : printf("\n\tNo, This is not Krishnamurti number");     //getch();     return 0;  }  long krishnamurti(long n) {     long rem, a = 0;     // c = digitCount(n);     while (n > 0) {        rem = n % 10;        a = a + (factorial(rem));        n = n / 10;     }     return a;  }  long factorial(long n) {     long i, fact = 1;     for (i = n;i > 0;i--)        fact \*= i;     //printf("\n%ld", fact);     return fact;  }  **Output:**  Check Krishnamurti number  Enter number: 145  Yes, This is Krishnamurti number  /\* 54. Write a program to convert decimal to binary. \*/  #include<stdio.h>  #include<conio.h>  long decimalTo(int, int);  void decimalToBinaryBitwise(int);  int main() {     int n;     //clrscr();     printf("\n\tEnter Decimal number: ");     scanf("%d", &n);     printf("Decimal = %d", n);     printf("\nBinary = %ld", decimalTo(n, 2)); // 2 for binary conversion     //printf("\nOctal = %ld", decimalTo(n, 8)); // 8 for octal conversion     printf("\nBinaryBitwise = ");     decimalToBinaryBitwise(n);     //getch();     return 0;  }  long decimalTo(int decimal, int binary\_base) {// here binary\_base change 8 then this function will convert decimal to octal.     int binary = 0, placeValue = 1, decimal\_base = 10; // if binary to decimal convert then, this base is 2 and argument base is 10     while (decimal > 0) {        int last\_digit = decimal % binary\_base;        decimal /= binary\_base;        binary += last\_digit \* placeValue;        placeValue \*= decimal\_base;     }     return binary;  }  void decimalToBinaryBitwise(int n) {     int i;     int size = sizeof(n) \* 8; // normally 32 bits.     // printf("size = %d\n", size);     int flag = 0;     for (i = size - 1; i >= 0; i--) {        int bit = (n >> i) & 1; // this line do: right shit remove bit and & (AND) operator return only that bit.        // ex. n=5, i=2 then: (101 >> 2) => 1 , 1 & 1 => 1        // ex. n=8, i=2 then: (1000 >> 2) => 10 & 01 => 00 (previous add any amount of 0 it's okay)        // printf("i%d", i);        // printf("b%d\t", bit);        if (bit == 1 && flag == 0) { // one time condition true then another all time condition is false           flag = 1; // Set flag to indicate first 1 has been found           // printf("%d\t", bit);        }        if (flag == 1) { // start printing bits after the first 1 found. because previous 0 are not meaningful in binary representation.           printf("%d", bit);        }     }  }  **Output:**  Enter Decimal number: 182  Decimal = 182  Binary = 10110110  BinaryBitwise = 10110110  /\* 55. Write a program to convert decimal to octal. \*/  #include<stdio.h>  #include<conio.h>  int decimalToOctal(int);  int main() {     int decimal;     //clrscr();     printf("\n\tEnter Decimal number: ");     scanf("%d", &decimal);     printf("\n\t %d Decimal = %d Octal", decimal, decimalToOctal(decimal));     //getch();     return 0;  }  int decimalToOctal(int decimal) {     int octal = 0, placeValue = 1, lastDigit;     while (decimal > 0) {        lastDigit = decimal % 8;        decimal /= 8;        octal += lastDigit \* placeValue;        placeValue \*= 10;     }     return octal;  }  **Output:**  Enter Decimal number: 153289  153289 Decimal = 453311 Octal  /\* 59 Write a program to accept amount paid as number (integer) and display it in words. (e.g. Rs 1541 in word : One Thousand Five Hundred Fourty One ). Consider user will enter more than 999 and less than 9999.  \*/  #include<stdio.h>  #include<conio.h>  void inword(long);  void inword1(long);  int main() {     long n;     //clrscr();     printf("\n\tEnter Number: ");     scanf("%ld", &n);     inword(n);     //getch();     return 0;  }  void inword(long x) {     long divid, remainder;     if (x >= 1 && x <= 19) {        inword1(x);     }     else if (x >= 20 && x <= 99) {        divid = (x / 10) \* 10;        inword1(divid);        remainder = x % 10;        if (remainder > 0) {           inword1(remainder);        }     }     else if (x >= 100 && x <= 999) {        divid = x / 100;        inword1(divid);        printf(" hundred");        remainder = x % 100;        if (remainder > 0) {           inword(remainder);        }     }     else if (x >= 1000 && x <= 99999) {        divid = x / 1000;        inword(divid);        printf(" thousand");        remainder = x % 1000;        if (remainder > 0) {           inword(remainder);        }     }     else if (x >= 100000 && x <= 9999999) {        divid = x / 100000;        inword(divid);        printf(" lakh");        remainder = x % 100000;        if (remainder > 0) {           inword(remainder);        }     }     else if (x >= 10000000 && x <= 999999999) {        divid = x / 10000000;        inword1(divid);        printf(" crore");        remainder = x % 10000000;        if (remainder > 0) {           inword(remainder);        }     }     else if (x >= 1000000000 && x <= 99999999999) {        divid = x / 1000000000;        inword1(divid);        printf(" arab");        remainder = x % 1000000000;        if (remainder > 0) {           inword(remainder);        }     }     else {        printf("invalid number");     }  }  void inword1(long x) {     switch (x) {     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 10: printf(" ten"); break;     case 11: printf(" eleven"); break;     case 12: printf(" twelve"); break;     case 13: printf(" thirteen"); break;     case 14: printf(" fourteen"); break;     case 15: printf(" fifteen"); break;     case 16: printf(" sixteen"); break;     case 17: printf(" seventeen"); break;     case 18: printf(" eighteen"); break;     case 19: printf(" nineteen"); break;     case 20: printf(" twenty"); break;     case 30: printf(" thirty"); break;     case 40: printf(" forty"); break;     case 50: printf(" fifty"); break;     case 60: printf(" sixty"); break;     case 70: printf(" seventy"); break;     case 80: printf(" eighty"); break;     case 90: printf(" ninety"); break;     default: printf("invalid"); break;     }  }  **Output:**  Enter Number: 1432  one thousand four hundred thirty two  /\* 61-94 all patterns \*/  #include<stdio.h>  #include<conio.h>  #include<stdlib.h>  int menu();  void pp(int);  void px(int);  void p58(int);  void p59(int);  void p60(int);  void p61(int);  void p62(int);  void p63(int);  void p64(int);  void p65(int);  void p66(int);  void p67(int);  void p68(int);  void p69(int);  void p70(int);  void p71(int);  void p72(int);  void p73(int);  void p74(int);  void p75(int);  void p76(int);  void p77(int);  void p78(int);  void p79(int);  void p80(int);  void p81(int);  void p82(int);  void p83(int);  void p84(int);  void p85(int);  void p86(int);  void p87(int);  void p88(int);  void p89(int);  void p90(int);  void p91(int);  void p92(int);  void p93(int);  void p94(int);  int main() {     int i, n, x;     // clrscr();     do {        char c = 'C';        i = menu();        if (i != 0) {           printf("\n\tEnter n : ");           scanf("%d", &n);        }        switch (i) {        case 0: exit(1);        case 56: pp(n); break;        case 57: px(n); break;        case 58: p58(n); break;        case 59: p59(n); break;        case 60: p60(n); break;        case 61: p61(n); break;        case 62: p62(n); break;        case 63: p63(n); break;        case 64: p64(n); break;        case 65: p65(n); break;        case 66: p66(n); break;        case 67: p67(n); break;        case 68: p68(n); break;        case 69: p69(n); break;        case 70: p70(n); break;        case 71: p71(n); break;        case 72: p72(n); break;        case 73: p73(n); break;        case 74: p74(n); break;        case 75: p75(n); break;        case 76: p76(n); break;        case 77: p77(n); break;        case 78: p78(n); break;        case 79: p79(n); break;        case 80: p80(n); break;        case 81: p81(n); break;        case 82: p82(n); break;        case 83: p83(n); break;        case 84: p84(n); break;        case 85: p85(n); break;        case 86: p86(n); break;        case 87: p87(n); break;        case 88: p88(n); break;        case 89: p89(n); break;        case 90: p90(n); break;        case 91: p91(n); break;        case 92: p92(n); break;        case 93: p93(n); break;        case 94: p94(n); break;        default: printf("Enter valid number\n"); break;        }        printf("\n\n\t\t%continue ? then press enter", c);        c = getch();     } while (1);  }  void p58(int n) {     int i, j;     char c = 'A';     for (i = 1;i <= n;i++) {        for (j = 1;j <= n;j++) {           printf("%c\t", c);           c++;        }        printf("\n");     }  }  void p59(int n) {     int i, j;     char c = 'A';     for (i = 1;i <= n;i++) {        for (j = 1;j <= n;j++) {           if (i % 2 != 0) {              printf("%d\t", j);           }           else {              printf("%c\t", c);              c++;           }        }        c = 'A';        printf("\n");     }  }  void p60(int n) {     int i, j;     for (i = 1;i <= n;i++) {        for (j = 1;j <= n;j++) {           printf("\*\t");        }        printf("\n");     }  }  void p61(int n) {     int i, j;     for (i = 1;i <= n;i++) {        for (j = 1;j <= n;j++) {           printf("%d\t", j);        }        printf("\n");     }  }  void p62(int n) {     int i, j, v = 1;     for (i = 1;i <= n;i++) {        for (j = 1;j <= n;j++) {           printf("%d\t", v);           v++;        }        printf("\n");     }  }  void p63(int n) {     int i, j;     for (i = 1;i <= n;i++) {        for (j = i;j <= n;j++) {           printf(" ");        }        for (j = 1;j <= i;j++) {           printf("\*");        }        printf("\n");     }  }  void p64(int n) {     int i, j;     for (i = 1;i <= n;i++) {        for (j = 1;j <= i;j++) {           printf("\*");        }        printf("\n");     }  }  void p65(int n) {     int i, j;     for (i = 1;i <= n;i++) {        for (j = i;j <= n;j++) {           printf(" ");        }        for (j = 1;j <= i;j++) {           printf("\* ");        }        printf("\n");     }  }  void p66(int n) {     int i, j, v = 1;     for (i = 1;i <= n;i++) {        for (j = i;j <= n;j++) {           printf(" ");        }        for (j = 1;j <= i;j++) {           printf("%d ", v++);        }        printf("\n");        v = 1;     }  }  void p67(int n) {     int i, j;     for (i = 1;i <= n;i++) {        for (j = i;j <= n;j++) {           printf(" ");        }        for (j = 1;j <= i;j++) {           printf("%d ", i);        }        printf("\n");     }  }  void p68(int n) {     int i, j;     for (i = 0;i < n;i++) {        for (j = 0;j < i;j++)           printf(" ");        for (j = i;j < n;j++)           printf("%d", n - i);        printf("\n");     }  }  void p69(int n) {     int i, j;     for (i = 0;i < n;i++) {        for (j = 0;j < i;j++)           printf(" ");        for (j = i;j < n;j++)           printf("$");        printf("\n");     }  }  void p70(int n) {     int i, j;     for (i = 1;i <= n;i++) {        for (j = i;j <= n;j++) {           printf(" $");        }        printf("\n");     }  }  void p71(int n) {     int i, j, v = 1;     for (i = 1;i < n;i++) {        for (j = 1;j <= i;j++) {           printf(" %d", v);           v++;        }        printf("\n");     }  }  void p72(int n) {     int i, j;     for (i = 1;i <= n;i++) {        for (j = 1;j <= i;j++) {           printf("%d", j);        }        printf("\n");     }  }  void p73(int n) {     int i, j, v = 1;     for (i = 1;i <= n;i++) {        for (j = i;j <= n;j++) {           printf("   %d", v++);        }        printf("\n");     }  }  void p74(int n) {     int i, j, v = 1;     for (i = 1;i <= n;i++) {        for (j = i;j <= n;j++) {           printf(" %d", v++);        }        v = 1;        printf("\n");     }  }  void p75(int n) {     int i, j, v = 1;     for (i = 1; i <= n; i++) {        for (j = 1; j < i; j++) {           printf("  ");        }        for (j = i; j <= n; j++) {           printf("%d ", v++);        }        printf("\n");     }  }  void p76(int n) {     int i, j, v = n \* n;     for (i = 1;i <= n;i++) {        for (j = 1;j <= n;j++) {           printf("%d\t", v);           v--;        }        printf("\n");     }  }  void p77(int n) {     int i, j, v = 0;     for (i = 0;i < n;i++)        for (j = i;j < n;j++)           v++;     for (i = 0;i < n;i++) {        for (j = 0;j < i;j++)           printf("  ");        for (j = i;j < n;j++)           printf(" %d", v--);        printf("\n");     }  }  void p78(int n) {     int i, j, k = (n \* 2) - 3;     for (i = 1;i <= n;i++) {        for (j = 1;j <= i;j++) {           printf("%d", j);        }        for (j = 1;j <= k;j++) {           printf(" ");        }        k -= 2;        for (j = i;j > 0;j--) {           if (j == n) continue;           printf("%d", j);        }        printf("\n");     }  }  void p79(int n) {     int i, j;     char c = 'A';     for (i = 1;i <= n;i++) {        for (j = 1;j <= i;j++) {           if (i % 2 != 0)              printf(" %d", j);           else              printf(" %c", c++);        }        printf("\n");     }  }  void p80(int n) {     int i, j;     char c = 'A';     for (i = 1;i <= n;i++) {        for (j = 1;j <= i;j++) {           printf(" %c", c++);        }        printf("\n");        c = 'A';     }  }  void p81(int n) {     int i, j, k = 5;     for (i = 1;i <= (n \* 2) - 1;i++) {        if (i <= n) {           for (j = i;j <= n;j++) {              printf(" ");           }           for (j = 1;j <= i;j++) {              printf("\* ");           }           printf("\n");        }        else {           for (j = 1; j <= i - n;j++) {              printf(" ");           }           for (j = 1;j <= k - 1;j++) {              printf(" \*");           }           k--;           printf("\n");        }     }  }  void p82(int n) {     int i, j, k = 5;     for (i = 1;i <= (n \* 2) - 1;i++) {        if (i <= n) {           for (j = i;j <= n;j++) {              printf(" ");           }           for (j = 1;j <= i;j++) {              if (j == 1 || j == i)                 printf("\* ");              else                 printf("  ");           }           printf("\n");        }        else {           for (j = 1; j <= i - n;j++) {              printf(" ");           }           for (j = 1;j < k;j++) {              if (j == 1 || j == k - 1)                 printf(" \*");              else                 printf("  ");           }           k--;           printf("\n");        }     }  }  void p83(int n) {     int i, j;     for (i = 1;i <= n;i++) {        for (j = 1;j <= n;j++) {           if (i == 1 || i == n)              printf("\*");           else if (j == 1 || j == n)              printf("\*");           else              printf(" ");        }        printf("\n");     }  }  void p84(int n) {     int i, j, k = (n \* 2) - 3;     for (i = 1;i <= n;i++) {        for (j = 1;j <= i;j++) {           printf("\*");        }        for (j = 0;j <= k;j++) {           printf(" ");        }        k -= 2;        for (j = i;j > 0;j--) {           printf("\*");        }        printf("\n");     }  }  void p85(int n) {     int i, j, v;     for (i = 0;i < n;i++) {        for (j = i;j < n;j++) {           printf(" ");        }        v = 1;        for (j = 0;j <= i;j++) {           printf("%d ", v);           v = v \* (i - j) / (j + 1);        }        printf("\n");     }  }  void p86(int n) {     int i, j, v;     for (i = 0;i < n;i++) {        for (j = 0;j < i;j++)           printf(" ");        v = 97;        for (j = i;j < n;j++)           printf("%c ", v++);        printf("\n");     }  }  void p87(int n) {     int i, j, v = 1, k = 1;     for (i = 1;i <= n;i++) {        for (j = 0;j < i;j++) {           if (j == 0) {              v = k;           }           if (v == 1) {              printf("%d", 1);              v = 0;           }           else {              printf("%d", 0);              v = 1;           }           if (j == i - 1) {              if (k == 1)                 k = 0;              else                 k = 1;           }        }        printf("\n");     }  }  void p88(int n) {     int i, j, o = 1;     for (i = 1;i <= n;i++) {        for (j = 1;j <= i;j++) {           printf(" %d", o);           o = o + 2;        }        o = 1;        printf("\n");     }  }  void p89(int n) {     int i, j;     for (i = 0;i < n;i++) {        for (j = 0;j < i;j++)           printf("  ");        for (j = 1;j <= n - i;j++)           printf(" %d", j \* j);        printf("\n");     }  }  void p90(int n) {     int i, j;     char c = 'A';     for (i = 1;i <= n;i++) {        for (j = 1;j <= n;j++) {           printf("%c\t", c);           if (c == 'A')              c = 'a';           else              c = 'A';        }        printf("\n");     }  }  void p91(int n) {     int i, j;     char c = 'a';     for (i = 1;i <= n;i++) {        for (j = 1;j <= n;j++) {           printf("%c\t", c);           c++;        }        printf("\n");     }  }  void p92(int n) {     int i, j, v, k;     for (i = 1;i <= n;i++) {        for (j = i;j <= n;j++) {           printf("  ");        }        v = i;        for (j = 1;j <= i;j++) {           printf(" %d", v--);        }        k = 1;        for (j = 1;j < i;j++) {           printf(" %d", ++k);        }        printf("\n");     }  }  void p93(int n) {     int i, j, sp = -1;     for (i = n;i >= 1;i--) {        for (j = 1;j <= i;j++) {           printf(" \*");        }        for (j = 1;j <= sp;j++) {           printf("  ");        }        sp += 2;        for (j = i;j >= 1;j--) {           if (j == n) continue;           printf(" \*");        }        printf("\n");     }  }  void p94(int n) {     int i, j, sp = -1, a, k = (n \* 2) - 3;     for (i = n;i >= 1;i--) {        for (j = 1;j <= i;j++) {           printf(" \*");        }        for (j = 1;j <= sp;j++) {           printf("  ");        }        sp += 2;        for (j = i;j >= 1;j--) {           if (j == n) continue;           printf(" \*");        }        printf("\n");     }     for (i = 1;i <= n;i++) {        if (i == 1) continue;        for (j = 1;j <= i;j++) {           printf(" \*");        }        k -= 2;        for (j = 1;j <= k;j++) {           printf("  ");        }        for (j = i;j > 0;j--) {           if (j == n) continue;           printf(" \*");        }        printf("\n");     }  }  void px(int n) {     int i, j;     if (n % 2 == 0)        n++;     for (i = 1;i <= n;i++) {        for (j = 1;j <= n;j++) {           if (i == j || j == n - i + 1)              printf("\*");           else              printf(" ");        }        printf("\n");     }  }  void pp(int n) {     int i, j, m;     if (n % 2 == 0)        n++;     m = (1 + n) / 2;     for (i = 1;i <= n;i++) {        for (j = 1;j <= n;j++) {           if (m == j || m == i)              printf("+");           else              printf(" ");        }        printf("\n");     }  }  int menu() {     int i, v = 1, c;     if (v != 1) {        printf("\n\tContinue then press enter");        c = getch();     }     v++;     printf("\n%d%c", v, c);     printf("\n\t\t\tSeries");     printf("\n\t 0. Exit\t\t56. pattern + \t\t57. pattern x");     printf("\n\t 58. pattern 58\t\t59. pattern 59\t\t60. pattern 60");     printf("\n\t 61. pattern 61\t\t71. pattern 71\t\t81. pattern 81");     printf("\n\t 62. pattern 62\t\t72. pattern 72\t\t82. pattern 82");     printf("\n\t 63. pattern 63\t\t73. pattern 73\t\t83. pattern 83");     printf("\n\t 64. pattern 64\t\t74. pattern 74\t\t84. pattern 84");     printf("\n\t 65. pattern 65\t\t75. pattern 75\t\t85. pattern 85");     printf("\n\t 66. pattern 66\t\t76. pattern 76\t\t86. pattern 86");     printf("\n\t 67. pattern 67\t\t77. pattern 77\t\t87. pattern 87");     printf("\n\t 68. pattern 68\t\t78. pattern 78\t\t88. pattern 88");     printf("\n\t 69. pattern 69\t\t79. pattern 79\t\t89. pattern 89");     printf("\n\t 90. pattern 90\t\t91. pattern 91\t\t92. pattern 92");     printf("\n\t 93. pattern 93");     printf("\n\n\tEnter Number: ");     scanf("%d", &i);     v++;     return i;  }  **Output:**  2╠  Series  0. Exit 56. pattern + 57. pattern x  58. pattern 58 59. pattern 59 60. pattern 60  61. pattern 61 71. pattern 71 81. pattern 81  62. pattern 62 72. pattern 72 82. pattern 82  63. pattern 63 73. pattern 73 83. pattern 83  64. pattern 64 74. pattern 74 84. pattern 84  65. pattern 65 75. pattern 75 85. pattern 85  66. pattern 66 76. pattern 76 86. pattern 86  67. pattern 67 77. pattern 77 87. pattern 87  68. pattern 68 78. pattern 78 88. pattern 88  69. pattern 69 79. pattern 79 89. pattern 89  90. pattern 90 91. pattern 91 92. pattern 92  93. pattern 93  Enter Number: 56  Enter n : 5  +  +  +++++  +  +  Continue ? then press enter …[skip writing common part]  Enter Number: 57  Enter n : 5  \* \*  \* \*  \*  \* \*  \* \*  Enter Number: 58  Enter n : 5  A B C D E  F G H I J  K L M N O  P Q R S T  U V W X Y  Enter Number: 59  Enter n : 5  1 2 3 4 5  A B C D E  1 2 3 4 5  A B C D E  1 2 3 4 5  Enter Number: 60  Enter n : 5  \* \* \* \* \*  \* \* \* \* \*  \* \* \* \* \*  \* \* \* \* \*  \* \* \* \* \*  Enter Number: 61  Enter n : 5  1 2 3 4 5  1 2 3 4 5  1 2 3 4 5  1 2 3 4 5  1 2 3 4 5  Enter Number: 62  Enter n : 5  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  Enter Number: 63  Enter n : 5  \*  \*\*  \*\*\*  \*\*\*\*  \*\*\*\*\*  Enter Number: 64  Enter n : 5  \*  \*\*  \*\*\*  \*\*\*\*  \*\*\*\*\*  Enter Number: 65  Enter n : 5  \*  \* \*  \* \* \*  \* \* \* \*  \* \* \* \* \*  Enter Number: 66  Enter n : 5  1  1 2  1 2 3  1 2 3 4  1 2 3 4 5  Enter Number: 67  Enter n : 5  1  2 2  3 3 3  4 4 4 4  5 5 5 5 5  Enter Number: 68  Enter n : 5  55555  4444  333  22  1  Enter Number: 69  Enter n : 5  $$$$$  $$$$  $$$  $$  $  Enter Number: 70  Enter n : 5  $ $ $ $ $  $ $ $ $  $ $ $  $ $  $  Enter Number: 71  Enter n : 5  1  2 3  4 5 6  7 8 9 10  Enter Number: 72  Enter n : 5  1  12  123  1234  12345  Enter Number: 73  Enter n : 4  1 2 3 4  5 6 7  8 9  10  Enter Number: 74  Enter n : 5  1 2 3 4 5  1 2 3 4  1 2 3  1 2  1  Enter Number: 75  Enter n : 4  1 2 3 4  5 6 7  8 9  10  Enter Number: 76  Enter n : 5  25 24 23 22 21  20 19 18 17 16  15 14 13 12 11  10 9 8 7 6  5 4 3 2 1  Enter Number: 77  Enter n : 4  10 9 8 7  6 5 4  3 2  1  Enter Number: 78  Enter n : 4  1 1  12 21  123 321  1234321  Enter Number: 79  Enter n : 5  1  A B  1 2 3  C D E F  1 2 3 4 5  Enter Number: 80  Enter n : 5  A  A B  A B C  A B C D  A B C D E  Enter Number: 81  Enter n : 5  \*  \* \*  \* \* \*  \* \* \* \*  \* \* \* \* \*  \* \* \* \*  \* \* \*  \* \*  \*  Enter Number: 82  Enter n : 5  \*  \* \*  \* \*  \* \*  \* \*  \* \*  \* \*  \* \*  \*  Enter Number: 83  Enter n : 5  \*\*\*\*\*  \* \*  \* \*  \* \*  \*\*\*\*\*  Enter Number: 84  Enter n : 4  \* \*  \*\* \*\*  \*\*\* \*\*\*  \*\*\*\*\*\*\*\*  Enter Number: 85  Enter n : 5  1  1 1  1 2 1  1 3 3 1  1 4 6 4 1  Enter Number: 86  Enter n : 5  a b c d e  a b c d  a b c  a b  a  Enter Number: 87  Enter n : 5  1  01  101  0101  10101  Enter Number: 88  Enter n : 5  1  1 3  1 3 5  1 3 5 7  1 3 5 7 9  Enter Number: 89  Enter n : 5  1 4 9 16 25  1 4 9 16  1 4 9  1 4  1  Enter Number: 90  Enter n : 5  A a A a A  a A a A a  A a A a A  a A a A a  A a A a A  Enter Number: 91  Enter n : 5  a b c d e  f g h i j  k l m n o  p q r s t  u v w x y  Enter Number: 92  Enter n : 5  1  2 1 2  3 2 1 2 3  4 3 2 1 2 3 4  5 4 3 2 1 2 3 4 5  Enter Number: 93  Enter n : 5  \* \* \* \* \* \* \* \* \*  \* \* \* \* \* \* \* \*  \* \* \* \* \* \*  \* \* \* \*  \* \*  Enter Number: 0  /\*     Find out the Sum of following series   95. 1+2+3+….+n   96. 2+4+6+.…+n   97. 1+3+5+7+….+n   98. 12 + 22 + 32 + 42 + 52+ ….+n   99. 22 + 42 + 62 + 82 + ….+n  100. 22 - 42 + 62 - 82 + …………  101. 1^2 +2^2 +3^2 +4^2 ….+n  102. 1 +4 -9 +16 -25 +36 ….+n  103. 1! +2! +3! +4! +….n!  104. 1/1! +1/2! +1/3! +….1/n!  105. 1/22 + 1/42 + 1/62 + 1/82 + ….+n  106. X + X^2/2! + X^3/3! + X^4/4! + ….+n  107. X + X^3/3! + X^5/5! + X^7/7! + ….+n  108. x +x^2 +x^3 +x^4 +….+x^n  109. 1 +2 +4 +8 +16 +32 +….n  110. 1 +1/4 +1/9 +1/16 +….n  111. 1/1^2-1/2^2 +1/3^2-1/4^2 +….n  112. S=x + (x^2/2!) + (x^4/4!) + (x^6/6!) +…. + (x^n/n!)  \*/  #include<stdio.h>  #include<conio.h>  #include<math.h>  #include<stdlib.h>  int s95(int);  int s96(int);  int s97(int);  int s98(int);  int s99(int);  int s100(int);  long s101(int);  int s102(int);  long s103(int);  float s104(int);  float s105(int);  float s106(int, int);  float s107(int, int);  long s108(int, int);  long s109(int);  float s110(int);  float s111(int);  float s112(int, int);  long fact(int);  int menu();  int main() {     int n, i, x = 1;     // clrscr();     do {        char c = 'C';        i = menu();        if (i != 0 && i < 19) {           printf("\n\tEnter n numbers value: ");           scanf("%d", &n);        }        switch (i) {        case 0: exit(1);        case 1: printf("\tAnswer : %d", s95(n)); break;        case 2: printf("\tAnswer : %d", s96(n)); break;        case 3: printf("\tAnswer : %d", s97(n)); break;        case 4: printf("\tAnswer : %d", s98(n)); break;        case 5: printf("\tAnswer : %d", s99(n)); break;        case 6: printf("\tAnswer : %d", s100(n)); break;        case 7: printf("\tAnswer : %ld", s101(n)); break;        case 8: printf("\tAnswer : %d", s102(n)); break;        case 9: printf("\tAnswer : %ld", s103(n)); break;        case 10: printf("\tAnswer : %.3f", s104(n)); break;        case 11: printf("\tAnswer : %.4f", s105(n)); break;        case 12: {           printf("\tEnter base x value: ");           scanf("%d", &x);           printf("\tAnswer : %.3f", s106(n, x));           break;        }        case 13: {           printf("\tEnter base x value: ");           scanf("%d", &x);           printf("\tAnswer : %.3f", s107(n, x));           break;        }        case 14: {           printf("\tEnter base x value: ");           scanf("%d", &x);           printf("\tAnswer : %ld", s108(n, x));           break;        }        case 15: printf("\tAnswer : %ld", s109(n)); break;        case 16: printf("\tAnswer : %.3f", s110(n)); break;        case 17: printf("\tAnswer : %.3f", s111(n)); break;        case 18: {           printf("\tEnter base x value: ");           scanf("%d", &x);           printf("\tAnswer : %.3f", s112(n, x));           break;        }        default: printf("\t\tPlease enter between 1 to 18 !"); break;        }        x = 1;        printf("\n\t\t Press any key for %continue", c);        c = getch();     } while (n != 0);     getch();     return 0;  }  int menu() {     int n;     printf("\n\n\t----------Find out the Sum of following series----------\n");     printf("\n\t 0. Exit program");     printf("\n\t 1. 1 + 2 + 3 + 4 + ... + n");     printf("\n\t 2. 2 + 4 + 6 + 8 + ... + n");     printf("\n\t 3. 1 + 3 + 5 + 7 + ... + n");     printf("\n\t 4. 12 + 22 + 32 + 42 + ... + n");     printf("\n\t 5. 22 + 42 + 62 + 82 + ... + n");     printf("\n\t 6. 22 - 42 + 62 - 82 + ... + n");     printf("\n\t 7. 1^2 + 2^2 + 3^2 + 4^2 + ... + n");     printf("\n\t 8. 1 + 4 - 9 + 16 - 25 + ... + n");     printf("\n\t 9. 1! + 2! + 3! + 4! + ... + n"); // here ! is factorian     printf("\n\t10. 1/1! + 1/2! + 1/3! + 1/4! + ... + n");     printf("\n\t11. 1/22 + 1/42 + 1/62 + 1/82 + ... + n");     printf("\n\t12. x + x^2/2! + x^3/3! + x^4/4! + ... + n");     printf("\n\t13. x + x^3/3! + x^5/5! + x^7/7! + ... + n");     printf("\n\t14. x + x^2 + x^3 + x^4 + ... + n");     printf("\n\t15. 1 + 2 4 + 8 + 16 + ... + n");     printf("\n\t16. 1 + 1/4 + 1/9 + 1/16 + ... + n"); // i\*i     printf("\n\t17. 1/1^2 - 1/2^2 + 1/3^2 - 1/4^2 + ... + n");     printf("\n\t18. x + x^2/2! + x^4/4! + x^6/6! + ... + n");     printf("\n\n\tEnter your choice: ");     scanf("%d", &n);     return n;  }  int s95(int n) {     int i, sum = 0;     for (i = 1;i <= n;i++) {        sum = sum + i;     }     return sum;  }  int s96(int n) {     int i, sum = 0;     for (i = 2;i <= n \* 2;i = i + 2) {        sum = sum + i;     }     return sum;  }  int s97(int n) {     int i, sum = 0;     for (i = 1;i <= n \* 2;i = i + 2) {        sum = sum + i;     }     return sum;  }  int s98(int n) {     int i, sum = 0, s = 12;     for (i = 1;i <= n;i++) {        sum = sum + s;        s = s + 10;     }     return sum;  }  int s99(int n) {     int i, sum = 0, s = 22;     for (i = 1;i <= n;i++) {        sum = sum + s;        s = s + 20;     }     return sum;  }  int s100(int n) {     int i, sum = 22, s = 42, flag = 0;     for (i = 2;i <= n;i++) {        if (flag == 0) {           sum = sum - s;           flag = 1;        }        else {           sum = sum + s;           flag = 0;        }        s = s + 20;     }     return sum;  }  long s101(int n) {     int i;     long sum = 0;     for (i = 1;i <= n;i++) {        sum = sum + (i \* i);     }     return sum;  }  int s102(int n) {     int i, sum = 1, flag = 1;     for (i = 2;i <= n;i++) {        if (flag == 0) {           sum = sum - (i \* i);           flag = 1;        }        else {           sum = sum + (i \* i);           flag = 0;        }     }     return sum;  }  long s103(int n) {     int i;     long sum = 1, fact = 1;     for (i = 2;i <= n;i++) {        fact = fact \* i;        sum = sum + fact;     }     return sum;  }  float s104(int n) {     int i;     float sum = 1, fact = 1;     for (i = 2;i <= n;i++) {        fact = fact \* i;        sum = sum + (1 / fact);     }     return sum;  }  float s105(int n) {     int i;     float sum = 0, s = 22;     for (i = 1;i <= n;i++) {        sum = sum + (1 / s);        s = s + 20;     }     return sum;  }  float s106(int n, int x) {     int i;     float sum = 0, fact = 1;     for (i = 1;i <= n;i++) {        fact = fact \* i;        sum = sum + (pow(x, i) / fact);     }     return sum;  }  float s107(int n, int x) {     int i;     float sum = 0;     for (i = 1;i <= n \* 2;i = i + 2) {        sum = sum + (pow(x, i) / (float)fact(i));     }     return sum;  }  long s108(int n, int x) {     int i;     long sum = 0;     for (i = 1;i <= n;i++) {        sum = sum + pow(x, i);     }     return sum;  }  long s109(int n) {     int i;     long sum = 0, s = 1;     for (i = 1;i <= n;i++) {        sum = sum + s;        s = s + s;     }     return sum;  }  float s110(int n) {     int i;     float sum = 0;     for (i = 1;i <= n;i++) {        //printf("\nsum=%f, %f", sum, (1.0 / (i \* i)));        sum = sum + (1 / i \* i);        //printf("\nsum=%f, %f", sum, (1.0 / (i \* i)));     }     return sum;  }  float s111(int n) {     int i, sum = 1, flag = 1;     for (i = 2;i <= n;i++) {        if (flag == 0) {           sum = sum - (1.0 / (float)i \* i);           flag = 1;        }        else {           sum = sum + (1.0 / (float)i \* i);           flag = 0;        }     }     return sum;  }  float s112(int n, int x) {     int i, s = 0;     float sum = 0;     for (i = 1;i <= n;i++) {        sum = sum + (pow(x, s) / fact(s));        s = s + 2;     }     return sum;  }  long fact(int n) {     int i;     long fact = 1;     for (i = 2;i <= n;i++)        fact = fact \* i;     return fact;  }  **Output:**  ----------Find out the Sum of following series----------  0. Exit program  1. 1 + 2 + 3 + 4 + ... + n  2. 2 + 4 + 6 + 8 + ... + n  3. 1 + 3 + 5 + 7 + ... + n  4. 12 + 22 + 32 + 42 + ... + n  5. 22 + 42 + 62 + 82 + ... + n  6. 22 - 42 + 62 - 82 + ... + n  7. 1^2 + 2^2 + 3^2 + 4^2 + ... + n  8. 1 + 4 - 9 + 16 - 25 + ... + n  9. 1! + 2! + 3! + 4! + ... + n  10. 1/1! + 1/2! + 1/3! + 1/4! + ... + n  11. 1/22 + 1/42 + 1/62 + 1/82 + ... + n  12. x + x^2/2! + x^3/3! + x^4/4! + ... + n  13. x + x^3/3! + x^5/5! + x^7/7! + ... + n  14. x + x^2 + x^3 + x^4 + ... + n  15. 1 + 2 4 + 8 + 16 + ... + n  16. 1 + 1/4 + 1/9 + 1/16 + ... + n  17. 1/1^2 - 1/2^2 + 1/3^2 - 1/4^2 + ... + n  18. x + x^2/2! + x^4/4! + x^6/6! + ... + n  Enter your choice: 1  Enter n numbers value: 10  Answer : 55  Press any key for Continue … [skip writing common part]  Enter your choice: 2  Enter n numbers value: 10  Answer : 110  Enter your choice: 3  Enter n numbers value: 10  Answer : 100  Enter your choice: 4  Enter n numbers value: 70  Answer : 24990  Enter your choice: 5  Enter n numbers value: 100  Answer : 101200  Enter your choice: 6  Enter n numbers value: 8  Answer : -80  Enter your choice: 9  Enter n numbers value: 9  Answer : 409113  Enter your choice: 10  Enter n numbers value: 10  Answer : 1.718  Enter your choice: 11  Enter n numbers value: 11  Answer : 0.1438  Enter your choice: 12  Enter n numbers value: 12  Enter base x value: 2  Answer : 6.389  Enter your choice: 13  Enter n numbers value: 13  Enter base x value: 2  Answer : 3.655  Enter your choice: 14  Enter n numbers value: 14  Enter base x value: 3  Answer : 7174452  Enter your choice: 15  Enter n numbers value: 15  Answer : 32767    Enter your choice: 16  Enter n numbers value: 5  Answer : 1.000  Enter your choice: 17  Enter n numbers value: 5  Answer : 1.000  Enter your choice: 18  Enter n numbers value: 4  Enter base x value: 2  Answer : 3.756  /\* 113. Write a program to print sum of any 10 numbers using 1-D array. \*/  #include<stdio.h>  #include<conio.h>  int main() {     int num[] = { 11,12,13,14,15,16,17,18,19,20 }, i, sum = 0;     // clrscr();     for (i = 0; i < 10; i++) {        sum += num[i];     }     printf("\t\nSum of 10 number is: %d", sum);     // getch();     return 0;  }  **Output:**  Sum of 10 number is: 155  /\* 114. Write a program to find maximum and minimum element from 1- Dimensional array. \*/  #include<stdio.h>  #include<conio.h>  int main() {     int num[] = { 18,12,10,80,8,16,17,18,9,20 }, i, min = num[0], max = num[0];     // clrscr();     for (i = 0; i < 10; i++) {        if (min > num[i])           min = num[i];        if (max < num[i])           max = num[i];     }     printf("\t\nMaximum number is: %d", max);     printf("\t\nMinimum number is: %d", min);     // getch();     return 0;  }  **Output:**  Maximum number is: 80  Minimum number is: 8  /\* 115. Write a program to perform selection sort using 1-D array. \*/  #include<stdio.h>  #include<conio.h>  void selectionSort(int[], int);  int main() {     int num[] = { 18,12,10,80,8,16,17,18,9,20 }, i;     // clrscr();     printf("\t\nBefore select sort array value is: ");     for (i = 0; i < 10; i++) {        printf("%d, ", num[i]);     }     selectionSort(num, 10);     printf("\t\n After select sort array value is: ");     for (i = 0; i < 10; i++) {        printf("%d, ", num[i]);     }     // getch();     return 0;  }  void selectionSort(int arr[], int n) {     int i, j, temp;     for (i = 0;i < n;i++) {        for (j = i;j < n;j++) {           if (arr[i] > arr[j]) {              temp = arr[i];              arr[i] = arr[j];              arr[j] = temp;           }        }     }  }  **Output:**  Before select sort array value is: 18, 12, 10, 80, 8, 16, 17, 18, 9, 20,  After select sort array value is: 8, 9, 10, 12, 16, 17, 18, 18, 20, 80,  /\* 116. Write a program to perform bubble sort Using 1-D Array. \*/  #include<stdio.h>  #include<conio.h>  void bubbleSort(int[], int);  int main() {     int num[] = { 18,12,10,80,8,16,17,50,9,20 }, i;     // clrscr();     printf("\t\nBefore select sort array value is: ");     for (i = 0; i < 10; i++) {        printf("%d, ", num[i]);     }     bubbleSort(num, 10);     printf("\t\n After select sort array value is: ");     for (i = 0; i < 10; i++) {        printf("%d, ", num[i]);     }     // getch();     return 0;  }  void bubbleSort(int arr[], int n) {     int i, j, temp;     for (i = 0;i < n - 1;i++) {        for (j = 0;j < n - 1 - i;j++) {           if (arr[j] > arr[j + 1]) {              temp = arr[j];              arr[j] = arr[j + 1];              arr[j + 1] = temp;           }        }     }  }  **Output:**  Before select sort array value is: 18, 12, 10, 80, 8, 16, 17, 50, 9, 20,  After select sort array value is: 8, 9, 10, 12, 16, 17, 18, 20, 50, 80,  /\* 117. Write a program of linear and binary search. \*/  #include<stdio.h>  #include<conio.h>  int linerSearch(int[], int, int);  int binarySearch(int[], int, int);  int main() {     int num[] = { 8, 9, 10, 12, 16, 17, 18, 20, 50, 80 }, i, value, at;     // clrscr();     printf("\t\nArray value is: ");     for (i = 0; i < 10; i++) {        printf("%d, ", num[i]);     }     printf("\t\nEnter value from array: ");     scanf("%d", &value);     at = linerSearch(num, 10, value);     if (at >= 0)        printf("\t\n Search by 'Liner search' value %d At index: %d", value, at);     else        printf("\t\n %d is not found OR not present in array", value);     at = binarySearch(num, 10, value);     if (at >= 0)        printf("\t\n Search by 'Binary search' value %d At index: %d", value, at);     else        printf("\t\n %d is not found OR not present in array", value);     // getch();     return 0;  }  int linerSearch(int arr[], int n, int value) {     int at = 0, i, found = 0;     for (i = 0; i < n; i++) {        if (arr[i] == value) {           at = i;           found = 1;           break;        }     }     if (found) {        return at;     }     else {        return -1;     }  }  int binarySearch(int arr[], int n, int value) {     int at = 0, start, end, mid, found = 0, temp;     start = 0;     end = n - 1;     while (start <= end) {        mid = start + (end - start) / 2;        if (arr[mid] == value) {           at = mid;           found = 1;           break;        }        else if (arr[mid] < value) {           start = mid + 1;        }        else {           end = mid - 1;        }     }     if (found) {        return at;     }     else {        return -1;     }  }  **Output:**  Array value is: 8, 9, 10, 12, 16, 17, 18, 20, 50, 80,  Enter value from array: 12  Search by 'Liner search' value 12 At index: 3  Search by 'Binary search' value 12 At index: 3  /\* 118. Write a program to insert an element in 1-D array at specified place. \*/  #include<stdio.h>  #include<conio.h>  int insertAt(int[], int, int, int);  int main() {     int num[20] = { 8, 9, 10, 12, 16, 17, 18, 20, 50, 80 }, i, value, at, n = 10;     // clrscr();     printf("\t\nArray value is: ");     for (i = 0; i < n; i++) {        printf("%d, ", num[i]);     }     printf("\t\nEnter value to insert in array: ");     scanf("%d", &value);     printf("\t\nEnter index value: ");     scanf("%d", &at);     n = insertAt(num, n, value, at);     printf("\t\nAfter Insert Array value is: ");     for (i = 0; i < n; i++) {        printf("%d, ", num[i]);     }     // getch();     return 0;  }  int insertAt(int arr[], int n, int value, int at) {     int i, v = n;     if (at >= 0 && at <= n) {        for (i = v; i > at; i--) {           arr[i] = arr[i - 1];        }        arr[at] = value;        v++;     }     else {        printf("\t\n Invalid index to insert value");     }     return v;  }  **Output:**  Array value is: 8, 9, 10, 12, 16, 17, 18, 20, 50, 80,  Enter value to insert in array: 15  Enter index value: 4  After Insert Array value is: 8, 9, 10, 12, 15, 16, 17, 18, 20, 50, 80,  /\* 119. Write a program to delete an element from 1-D array. \*/  #include<stdio.h>  #include<conio.h>  int deleteAt(int[], int, int);  int main() {     int num[] = { 8, 9, 10, 12, 16, 17, 18, 20, 50, 80 }, i, value, n = 10;     // clrscr();     printf("\t\nArray value is: ");     for (i = 0; i < n; i++) {        printf("%d, ", num[i]);     }     printf("\t\nEnter value to delete from array: ");     scanf("%d", &value);     n = deleteAt(num, n, value);     printf("\t\nAfter Delete Array value is: ");     for (i = 0; i < n; i++) {        printf("%d, ", num[i]);     }     // getch();     return 0;  }  int deleteAt(int arr[], int n, int value) {     int i, v = n, at;     // find index of value     for (i = 0; i < n; i++) {        if (arr[i] == value) {           at = i;           break;        }     }     if (at >= 0 && at < n) {        for (i = at; i < v - 1; i++) {           arr[i] = arr[i + 1];        }        v--;     }     else {        printf("\t\n Invalid index to delete value");     }     return v;  }  **Output:**  Array value is: 8, 9, 10, 12, 16, 17, 18, 20, 50, 80,  Enter value to delete from array: 17  After Delete Array value is: 8, 9, 10, 12, 16, 18, 20, 50, 80,  /\* 120. Write a program to swap even position number with odd position. \*/  #include<stdio.h>  #include<conio.h>  void swapEvenOdd(int[], int);  int main() {     int num[] = { 8, 9, 10, 11, 16, 17, 18, 21, 80, 71 }, i, n = 10;     // clrscr();     printf("\t\nArray value is: ");     for (i = 0; i < n; i++) {        printf("%d, ", num[i]);     }     swapEvenOdd(num, n);     printf("\t\nAfter Swap Even-Odd position Array value is: ");     for (i = 0; i < n; i++) {        printf("%d, ", num[i]);     }     // getch();     return 0;  }  void swapEvenOdd(int arr[], int n) {     int i, temp;     for (i = 0; i < n - 1; i += 2) {        temp = arr[i];        arr[i] = arr[i + 1];        arr[i + 1] = temp;     }  }  **Output:**  Array value is: 8, 9, 10, 11, 16, 17, 18, 21, 80, 71,  After Swap Even-Odd position Array value is: 9, 8, 11, 10, 17, 16, 21, 18, 71, 80,  /\* 121. Write a program to Read n x n matrix. Print the original matrix and its transpose. \*/  #include<stdio.h>  #include<conio.h>  #define MAX 20  #define MORE 50  void print\_matrix(int m[MAX][MAX], int r, int c);  void tra\_matrix(int m[MAX][MAX], int r, int c);  int main() {     int matrix[MAX][MAX], i, j, r, c;     // clrscr();     printf("\n\t Enter row and column: ");     scanf("%d %d", &r, &c);     for (i = 0;i < r;i++)        for (j = 0;j < c;j++) {           printf("\tEnter value of matrix[%d][%d]: ", i, j);           scanf("%d", &matrix[i][j]);        }     printf("\n\t Original matrix\n");     print\_matrix(matrix, r, c);     printf("\t------------------------\n");     printf("\n\t Transpose matrix\n");     tra\_matrix(matrix, r, c);     // getch();     return 0;  }  void print\_matrix(int m[MAX][MAX], int r, int c) {     int i, j;     for (i = 0;i < r;i++) {        for (j = 0;j < c;j++) {           printf("\t%d", m[i][j]);        }        printf("\n");     }  }  void tra\_matrix(int m[MAX][MAX], int r, int c) {     int i, j, tm[MAX][MAX];     for (i = 0;i < r;i++) {        for (j = 0;j < c;j++) {           tm[i][j] = m[j][i];           printf("\t%d", tm[i][j]);        }        printf("\n");     }  }  **Output:**  Enter row and column: 3 3  Enter value of matrix[0][0]: 1  Enter value of matrix[0][1]: 2  Enter value of matrix[0][2]: 3  Enter value of matrix[1][0]: 4  Enter value of matrix[1][1]: 5  Enter value of matrix[1][2]: 6  Enter value of matrix[2][0]: 7  Enter value of matrix[2][1]: 8  Enter value of matrix[2][2]: 9  Original matrix  1 2 3  4 5 6  7 8 9  ------------------------  Transpose matrix  1 4 7  2 5 8  3 6 9  /\* 122. Write a Program to Read n x n two matrices A and B and find sum and multiplication. \*/  #include<stdio.h>  #include<conio.h>  #include<stdlib.h>  #define MAX 20  #define MORE 50  void print\_matrix(int m[MAX][MAX], int r, int c);  void matrix\_sum(int m1[MAX][MAX], int m2[MAX][MAX], int r, int c);  void matrix\_mul(int m1[MAX][MAX], int m2[MAX][MAX], int r, int c);  int main() {     int matrix[MAX][MAX], m2[MAX][MAX], i, j, r, c;     // clrscr();     printf("\n\t Enter row (row and column both are same): ");     scanf("%d", &c);     r = c;     for (i = 0;i < r;i++) {        for (j = 0;j < c;j++) {           printf("\tEnter value of matrix[%d][%d]: ", i, j);           scanf("%d", &matrix[i][j]);        }     }     printf("\n\n\tSecond matrix\n");     for (i = 0;i < r;i++) {        for (j = 0;j < c;j++) {           printf("\tEnter value of matrix[%d][%d]: ", i, j);           scanf("%d", &m2[i][j]);        }     }     printf("\n\t First matrix: \n");     print\_matrix(matrix, r, c);     printf("\t------------------------\n");     printf("\n\t Second matrix: \n");     print\_matrix(m2, r, c);     printf("\t------------------------\n");     printf("\n\t Sum of two matrix: \n");     matrix\_sum(matrix, m2, r, c);     printf("\t------------------------\n");     printf("\n\t Multiplication of two matrix: \n");     matrix\_mul(matrix, m2, r, c);     // getch();     return 0;  }  void print\_matrix(int m[MAX][MAX], int r, int c) {     int i, j;     for (i = 0;i < r;i++) {        for (j = 0;j < c;j++) {           printf("\t%d", m[i][j]);        }        printf("\n");     }  }  void matrix\_sum(int m1[MAX][MAX], int m2[MAX][MAX], int r, int c) {     int i, j, s = 0;     for (i = 0;i < r;i++) {        for (j = 0;j < c;j++) {           s = m1[i][j] + m2[i][j];           printf("\t%d", s);        }        printf("\n");     }  }  void matrix\_mul(int m1[MAX][MAX], int m2[MAX][MAX], int r, int c) {     int i, j, k, sum, n = r;     for (i = 0; i < n; i++) {        for (j = 0; j < n; j++) {           sum = 0;           for (k = 0; k < n; k++) {              sum += m1[i][k] \* m2[k][j];           }           printf("\t%d", sum);        }        printf("\n");     }  }  **Output:**  Enter row (row and column both are same): 3  Enter value of matrix[0][0]: 1  Enter value of matrix[0][1]: 2  Enter value of matrix[0][2]: 3  Enter value of matrix[1][0]: 4  Enter value of matrix[1][1]: 5  Enter value of matrix[1][2]: 6  Enter value of matrix[2][0]: 7  Enter value of matrix[2][1]: 8  Enter value of matrix[2][2]: 9  Second matrix  Enter value of matrix[0][0]: 9  Enter value of matrix[0][1]: 8  Enter value of matrix[0][2]: 7  Enter value of matrix[1][0]: 6  Enter value of matrix[1][1]: 5  Enter value of matrix[1][2]: 4  Enter value of matrix[2][0]: 3  Enter value of matrix[2][1]: 2  Enter value of matrix[2][2]: 1  First matrix:  1 2 3  4 5 6  7 8 9  ------------------------  Second matrix:  9 8 7  6 5 4  3 2 1  ------------------------  Sum of two matrix:  10 10 10  10 10 10  10 10 10  ------------------------  Multiplication of two matrix:  30 24 18  84 69 54  138 114 90  /\* 123. Write a program in C to enter marks of 10 students. Count how many students have secured marks above 80 and below 40.  \*/  #include<stdio.h>  #include<conio.h>  int main() {     int marks[10], i, above80 = 0, below40 = 0;     // clrscr();     for (i = 0;i < 10;i++) {        printf("\tEnter marks of student %d: ", i + 1);        scanf("%d", &marks[i]);        if (marks[i] > 80) {           above80++;        }        else if (marks[i] < 40) {           below40++;        }     }     printf("\n\tNumber of students secured marks above 80: %d", above80);     printf("\n\tNumber of students secured marks below 40: %d", below40);     // getch();     return 0;  }  **Output:**  Enter marks of student 1: 50  Enter marks of student 2: 38  Enter marks of student 3: 60  Enter marks of student 4: 76  Enter marks of student 5: 80  Enter marks of student 6: 90  Enter marks of student 7: 85  Enter marks of student 8: 92  Enter marks of student 9: 45  Enter marks of student 10: 64  Number of students secured marks above 80: 3  Number of students secured marks below 40: 1  /\* 124. An election is contested by 5 candidates. The candidates are numbered 1 to 5 and the voting is done by marking the candidate number on the ballot paper. Write a program in C to read the ballots and count the votes cast for each candidate using an array variable count. In case a number read is outside the range 1 to 5, the ballot should be considered as a spoilt ballot and the program should also count the number of spoilt ballots. \*/  #include<stdio.h>  #include<conio.h>  int main() {     int votes[5] = { 0 }, vote, i, spoilt = 0, total = 0;     // clrscr();     printf("\n\tEnter votes (1 to 5). Enter 0 to stop voting:\n");     while (1) {        printf("\tVote: ");        scanf("%d", &vote);        if (vote == 0) {           break;        }        else if (vote >= 1 && vote <= 5) {           votes[vote - 1]++;           total++;        }        else {           spoilt++;        }     }     printf("\n\tVote count:\n");     for (i = 0; i < 5; i++) {        printf("\tCandidate %d: %d votes\n", i + 1, votes[i]);     }     printf("\tSpoilt ballots: %d\n", spoilt);     printf("\tTotal valid votes: %d\n", total);     // getch();     return 0;  }  **Array**  #include<stdio.h>  #include<conio.h>  #include <stdlib.h>  #define SIZE 20  int nsum(int[], int);  void display(int[], int);  int average(int[], int);  int findMax(int[], int);  int findMin(int[], int);  void **bubble**(int[], int);   // **bubble sort**  int **find**(int[], int, int); // **Linear search**  int **binary\_search**(int[], int, int); // **binary search**  int delete\_element(int[], int, int);  int menu();  int main() {     int i, a[SIZE], n, x, y, j, v = 1;     // clrscr();     printf("\n\tHow many number: ");     scanf("%d", &n);     for (i = 0;i < n;i++) {        printf("\tEnter %d number: ", i + 1);        scanf("%d", &a[i]);     }     do {        v++;        x = menu();        switch (x) {        case 0: exit(1);        case 1: display(a, n); break;        case 2: printf("\n\t\tNumbers sum is : %d\n", nsum(a, n)); break;        case 3: printf("\n\t\tNumbers average is : %d\n", average(a, n)); break;        case 4: bubble(a, n); break;        case 5: {           printf("\n\t\tEnter finding number: ");           scanf("%d", &y);           j = find(a, n, y);           j != -1 ? printf("\n\t\tYes, %d is present at index %d\n", y, j) : printf("\n\t\tNo, %d is Not found\n", y);           break;        }        case 6: printf("\n\t\tMaximum value is %d\n", findMax(a, n)); break;        case 7: printf("\n\t\tMinimum value is %d\n", findMin(a, n)); break;        case 8: {           printf("\n\t\tEnter finding number: ");           scanf("%d", &y);           j = binary\_search(a, n, y);           printf("%d", j);           j != -1 ? printf("\n\t\tYes, %d is present at index %d\n", y, j) : printf("\n\t\tNo, %d is Not found\n", y);           break;        }        case 9: {           printf("\n\tEnter element Which you wan to delete: ");           scanf("%d", &y);           j = delete\_element(a, y, n);           if (j == -1) {              printf("\n\tNot Found! Enter valid element form array.\n");           }           else {              printf("\n\tElement deleted.\n");              n--; // now total element is 1 reduse           }           break;        }        case 10: {           if (n == SIZE) {              printf("\n\tArray limit is full! not possible to adding more element\n");           }           else {              printf("\n\tEnter element Which you wan to add: ");              scanf("%d", &y);              a[n] = y;              n++; // now total element is 1 increase              printf("\n\tElement added.\n");           }           break;        }        default: printf("\n\t\tEnter valid number from menu\n");        }     } while (true && v < 50);  }  int **delete\_element**(int a[], int v, int n) {     int i, d = -1;     for (i = 0;i < n;i++) {        if (v == a[i]) {           d = i;           break;        }     }     if (d == -1) {        return d;     }     for (i = d;i < n;i++) {        a[i] = a[i + 1];     }     return d;  }  int nsum(int a[], int n) {     int i, sum = 0;     for (i = 0;i < n;i++) {        sum = sum + a[i];     }     return sum;  }  int average(int a[], int n) {     int i, sum = 0;     for (i = 0;i < n;i++) {        sum = sum + a[i];     }     return sum / n;  }  int findMin(int a[], int n) {     int i, min = a[0];     for (i = 0;i < n;i++) {        if (min > a[i])           min = a[i];     }     return min;  }  int findMax(int a[], int n) {     int i, max = 0;     for (i = 0;i < n;i++) {        if (max < a[i])           max = a[i];     }     return max;  }  int find(int a[], int n, int y) { // Linear search     int i;     for (i = 0;i < n;i++) {        if (y == a[i])           return i;     }     return -1;  }  int **binary\_search**(int a[], int n, int y) {     int mid, s = 0, e = n - 1;     bubble(a, n); // binary search work only on sorted array     while (s <= e) {        mid = s + (e - s) / 2;        if (a[mid] == y)           return mid;        //printf("mid=%d, a[mid]=%d",mid,a[mid]);        if (a[mid] > y) {           e = mid - 1;           //printf("e=%d",e);        }        else {           s = mid + 1;        }     }     return -1;  }  void **bubble**(int a[], int n) { // **bubble sort**     int i, t, j;     for (i = 0;i < n - 1;i++) {        for (j = 0;j < n - 1 - i;j++) {           if (a[j] > a[j + 1]) {              t = a[j];              a[j] = a[j + 1];              a[j + 1] = t;           }        }     }     display(a, n);  }  void display(int a[], int n) {     int i;     printf("\n\t");     for (i = 0;i < n;i++) {        printf("\t%d", a[i]);     }     printf("\n");  }  int menu() {     int i;     printf("\n\t 0. Exit program");     printf("\n\t 1. display numbers");     printf("\n\t 2. get numbers sum");     printf("\n\t 3. get numbers average");     printf("\n\t 4. sorting numbers by bubble sort");     printf("\n\t 5. find number");     printf("\n\t 6. find maxnumber number");     printf("\n\t 7. find minnumber number");     printf("\n\t 8. find by binary search");     printf("\n\t 9. delete element");     printf("\n\t10. insert element");     printf("\n\t Enter number which you perform: ");     scanf("%d", &i);     return i;  }    **Output:**  How many number: 5  Enter 1 number: 1  Enter 2 number: 5  Enter 3 number: 2  Enter 4 number: 4  Enter 5 number: 3  0. Exit program  1. display numbers  2. get numbers sum  3. get numbers average  4. sorting numbers by bubble sort  5. find number  6. find maxnumber number  7. find minnumber number  8. find by binary search  9. delete element  10. insert element  Enter number which you perform: 1  1 5 2 4 3  Enter number which you perform: 2  Numbers sum is : 15  Enter number which you perform: 3  Numbers average is : 3  Enter number which you perform: 4  1 2 3 4 5  Enter number which you perform: 5  Enter finding number: 3  Yes, 3 is present at index 2  Enter number which you perform: 6  Maximum value is 5  Enter number which you perform: 7  Minimum value is 1  Enter number which you perform: 8  Enter finding number: 3  1 2 3 4 5  Yes, 3 is present at index 2  Enter number which you perform: 9  Enter element Which you want to delete: 5  Element deleted.  Enter number which you perform: 1  1 2 3 4  Enter number which you perform: 10  Enter element Which you want to add: 5  Element added.  Enter number which you perform: 1  1 2 3 4 5  **Character**  #include<stdio.h>  #include<conio.h>  #include<ctype.h>  void check\_char(char);  char convert(char);  int main() {     char ch;     // clrscr();     printf("\n\n\tEnter any character: ");     scanf("%c", &ch);     // find type     check\_char(ch);     // convert upper to lower & lower to upper     printf("\n\tConverted: %c", convert(ch));     getch();     return 0;  }  void check\_char(char ch) {     if (isdigit(ch))        printf("\n\n\t%c is a Digit", ch);     else if (isspace(ch))        printf("\n\n\t%c is a Space", ch);     else if (isalpha(ch)) {        printf("\n\n\t%c is an Alphabet", ch);        if (islower(ch))           printf("\n\n\t%c is in lowercase", ch);        else           printf("\n\n\t%c is in uppercase", ch);     }     else if (isalnum(ch))        printf("\n\n\t%c is an Alphanumeric character", ch);     else        printf("\n\n\t%c ", ch);  }  char convert(char ch) {     if (islower(ch))        return toupper(ch);     else        return tolower(ch);  }  **Output:**  1.  Enter any character: V  V is an Alphabet  V is in uppercase  Converted: v  2.  Enter any character:  is a Space  Converted:  3.  Enter any character: 8  8 is a Digit  Converted: 8  **Circular prime Number**  #include<stdio.h>  #include<conio.h>  #include<math.h>  int isPrime(int);  int isCircular\_prime(int);  int main() {     int n;     // clrscr();     printf("\n\tEnter number : ");     scanf("%d", &n);     1 == isCircular\_prime(n) ? printf("Yes, number is circular prime") : printf("No, number is not circular prime");     /\*     A circular prime number is a prime number that remains prime under all rotations of its digits.     EX. n = 197     197 → prime     971 → prime     719 → prime    All rotations are prime ⇒ 197 is a circular prime.     \*/     getch();     return 0;  }  int isPrime(int n) {     int i;     for (i = 2;i <= n / 2;i++) {        if (n % i == 0)           return 0;     }     return 1;  }  int isCircular\_prime(int n) {     int d = 0, p = 1, rem, cp = 0, t = n, i;     while (t > 0) {        d++;        t /= 10;     }     for (i = 1; i < d; i++)  // p = 10^(digits-1)        p = p \* 10;     // printf("%d %d\n", d, p);     while (d > 0) {        rem = n % p;        //printf("\nrem=%d", rem);        cp = (n / p) + (rem \* 10);        if (0 == (isPrime(cp))) return 0;        n = cp;        //printf("cp=%d n=%d", cp, n);        d--;     }     return 1;  }  **Output:**  Enter number : 197  Yes, number is circular prime  **File Handling: 1.**  #include<stdio.h>  #include<conio.h>  int main() {     int i, n, v;     char ch, s[150], name[50];     FILE\* f1;     FILE\* fnum, \* fodd, \* feven;     // clrscr();     // ----------- Write in Loop ------------     f1 = fopen("MCA.txt", "a");     printf("\n\tHow many student ? : ");     scanf("%d", &n);     for (i = 1;i <= n;i++) {        printf("\n\tEnter %d student name: ", i);        scanf(" %s", s);        fprintf(f1, "\t%s\n", s);     }     printf("\n\tEnter file name: ");     // scanf("%s", name);     gets(s);     // ------------ Write String --------------     f1 = fopen(name, "a");     flushall();     printf("\n\tEnter paragraph: ");     scanf("%[^\n]s", s);     //gets(s);     fprintf(f1, "%s", s); // write string     // --------------- Read Full File String ---------     f1 = fopen(name, "r");     printf("\n\t%s file data:- \n", name);     while ((ch = getc(f1)) != EOF) {        printf("%c", ch);     }     // read number from file and spereat even and odd number in two file     fnum = fopen("fnum.txt", "r");     fodd = fopen("fodd.txt", "w");     feven = fopen("feven.txt", "w");     while (!feof(fnum)) {        fscanf(fnum, "%d", &v); // read integer from file and value store in v vareable        if (v / 2 != 0) {           fprintf(fodd, "%d ", v);        }        else {           fprintf(feven, "%d ", v);        }     }     fclose(fnum);     fclose(fodd);     fclose(feven);     fclose(f1);     getch();     return 0;  }  **File Handling: 2.**  #include<stdio.h>  #include<conio.h>  int isPrime(int);  int main() {     int n, i = 2, v = 0;     FILE\* fnum, \* fodd, \* feven, \* fprime;     // clrscr();     // ----------- read integer data from fnum.txt file and if odd than store fodd.txt file else store feven.txt file     fnum = fopen("fnum.txt", "r");     fodd = fopen("fodd.txt", "w");     feven = fopen("feven.txt", "w");     while (!feof(fnum)) { // (n = getw(fnum)) != EOF        fscanf(fnum, "%d", &n); // read integer from file and value store in v vareable        //printf("%d", n);        if (n % 2 != 0) {           fprintf(fodd, "%d ", n);        }        else {           fprintf(feven, "%d ", n);        }     }     printf("Work Done");     fclose(fnum);     fclose(fodd);     fclose(feven);     // ------------ Write prime number in file     fprime = fopen("fprime.txt", "w");     printf("\n\tEnter how many prime numbers store: ");     scanf("%d", &n);     while (v < n) {        if (isPrime(i)) {           v++;           fprintf(fprime, "%d. %d\n", v, i); // write numbers in file           // printf("%d ", i);        }        i++;     }     printf("Work Done");     fclose(fprime);     getch();     return 0;  }  int isPrime(int n) {     int i;     for (i = 2;i <= n / 2;i++) {        if (n % i == 0)           return 0;     }     return 1;  }  **For Loop:**  #include<stdio.h>  #include<conio.h>  void table(int);  void ascii();  void gap10();  void even();  void odd();  int main() {     int i, n, v;     // clrscr();     for (i = 1;i <= 10;i++)        printf("\ti = %d", i);     printf("\n");     i = 1;     for (;;) {        printf("\ti = %d", i);        if (i >= 10)           break;        else           i++;     }     /\*     printf("\n");     for(;;){ // infinite loop        printf("\n\tHey There");     }     \*/     printf("\n");     for (i = 1; i <= 100; i++);     {        printf("\ti = %d", i);     }     printf("\n");     for (i = 100; i > 0; i -= 10) {        printf("\ti = %d", i);     }     printf("\n");     printf("\n\tEnter which table you need: ");     scanf("%d", &n);     table(n);     v = getch();     printf("\n\t%c", v);     printf("\n");     ascii();     v = getch();     printf("\n\t%c", v);     printf("\n");     gap10();     printf("\n");     even();     v = getch();     printf("\n\t%c", v);     printf("\n");     odd();     v = getch();     printf("\n\t%c", v);     getch();     return 0;  }  void gap10() {     int i;     char n;     for (i = 1; i <= 100; i++) {        printf("\ti = %d", i);        if (i % 10 == 0) {           // n = getch();           printf("\t%c\n", n);        }     }  }  void even() {     int i;     printf("\n\tEven number=> \n");     for (i = 1;i <= 100;i++) {        if (i % 2 == 0)           printf("i = %d\t", i);        else           continue;     }  }  void odd() {     int i;     printf("\todd number=> \n");     for (i = 1;i <= 100;i++) {        if (i % 2 == 0)           continue;        else           printf("i = %d\t", i);     }  }  void table(int n) {     int i;     for (i = 1;i <= 10;i++) {        printf("\n\t%d x %d = %d", n, i, n \* i);     }  }  void ascii() {     int i;     int c = 65;     printf("\n\tASCII for A to Z and a to z\n");     for (i = 1;i <= 26;i++) {        printf("\t%d=>%c\t", c, c);        printf("\t%d=>%c\n", c + 32, c + 32);        c = c + 1;     }  }  **Output:**  i = 1 i = 2 i = 3 i = 4 i = 5 i = 6 i = 7 i = 8 i = 9 i = 10  i = 1 i = 2 i = 3 i = 4 i = 5 i = 6 i = 7 i = 8 i = 9 i = 10  i = 101  i = 100 i = 90 i = 80 i = 70 i = 60 i = 50 i = 40 i = 30 i = 20 i = 10  Enter which table you need: 8  8 x 1 = 8  8 x 2 = 16  8 x 3 = 24  8 x 4 = 32  8 x 5 = 40  8 x 6 = 48  8 x 7 = 56  8 x 8 = 64  8 x 9 = 72  8 x 10 = 80  ASCII for A to Z and a to z  65=>A 97=>a  66=>B 98=>b  67=>C 99=>c  68=>D 100=>d  69=>E 101=>e  70=>F 102=>f  71=>G 103=>g  72=>H 104=>h  73=>I 105=>i  74=>J 106=>j  75=>K 107=>k  76=>L 108=>l  77=>M 109=>m  78=>N 110=>n  79=>O 111=>o  80=>P 112=>p  81=>Q 113=>q  82=>R 114=>r  83=>S 115=>s  84=>T 116=>t  85=>U 117=>u  86=>V 118=>v  87=>W 119=>w  88=>X 120=>x  89=>Y 121=>y  90=>Z 122=>z  i = 1 i = 2 i = 3 i = 4 i = 5 i = 6 i = 7 i = 8 i = 9 i = 10  i = 11 i = 12 i = 13 i = 14 i = 15 i = 16 i = 17 i = 18 i = 19 i = 20  i = 21 i = 22 i = 23 i = 24 i = 25 i = 26 i = 27 i = 28 i = 29 i = 30  i = 31 i = 32 i = 33 i = 34 i = 35 i = 36 i = 37 i = 38 i = 39 i = 40  i = 41 i = 42 i = 43 i = 44 i = 45 i = 46 i = 47 i = 48 i = 49 i = 50  i = 51 i = 52 i = 53 i = 54 i = 55 i = 56 i = 57 i = 58 i = 59 i = 60  i = 61 i = 62 i = 63 i = 64 i = 65 i = 66 i = 67 i = 68 i = 69 i = 70  i = 71 i = 72 i = 73 i = 74 i = 75 i = 76 i = 77 i = 78 i = 79 i = 80  i = 81 i = 82 i = 83 i = 84 i = 85 i = 86 i = 87 i = 88 i = 89 i = 90  i = 91 i = 92 i = 93 i = 94 i = 95 i = 96 i = 97 i = 98 i = 99 i = 100  Even number=>  i = 2 i = 4 i = 6 i = 8 i = 10 i = 12 i = 14 i = 16 i = 18 i = 20 i = 22 i = 24 i = 26 i = 28 i = 30 i = 32 i = 34 i = 36 i = 38 i = 40 i = 42 i = 44 i = 46 i = 48 i = 50 i = 52 i = 54 i = 56 i = 58 i = 60 i = 62 i = 64 i = 66 i = 68 i = 70 i = 72 i = 74 i = 76 i = 78 i = 80 i = 82 i = 84 i = 86 i = 88 i = 90 i = 92 i = 94 i = 96 i = 98 i = 100  odd number=>  i = 1 i = 3 i = 5 i = 7 i = 9 i = 11 i = 13 i = 15 i = 17 i = 19 i = 21 i = 23 i = 25 i = 27 i = 29 i = 31 i = 33 i = 35 i = 37 i = 39 i = 41 i = 43 i = 45 i = 47 i = 49 i = 51 i = 53 i = 55 i = 57 i = 59 i = 61 i = 63 i = 65 i = 67 i = 69 i = 71 i = 73 i = 75 i = 77 i = 79 i = 81 i = 83 i = 85 i = 87 i = 89 i = 91 i = 93 i = 95 i = 97 i = 99  **MATRIX Programs:**  #include<stdio.h>  #include<conio.h>  #include<stdlib.h>  #define MAX 20  #define MORE 50  void print\_matrix(int m[MAX][MAX], int r, int c);  void tra\_matrix(int m[MAX][MAX], int r, int c);  void matrix\_sum(int m1[MAX][MAX], int m2[MAX][MAX], int r, int c);  void matrix\_sub(int m1[MAX][MAX], int m2[MAX][MAX], int r, int c);  void matrix\_mul(int m1[MAX][MAX], int m2[MAX][MAX], int r, int c);  void matrix\_row\_col\_sum(int[MAX][MAX], int, int);  void magic\_matrix(int[MAX][MAX], int, int);  int menu();  int main() {     int matrix[MAX][MAX], m2[MAX][MAX], i, j, r, c;     char name[MAX][MORE];     // clrscr();     do {        switch (menu()) {        case 0: exit(1);        case 1:           printf("\n\t Enter row and column: ");           scanf("%d %d", &r, &c);           for (i = 0;i < r;i++)              for (j = 0;j < c;j++) {                 printf("\tEnter value of matrix[%d][%d]: ", i, j);                 scanf("%d", &matrix[i][j]);              }           print\_matrix(matrix, r, c);           break;        case 2:           printf("\n\t Enter row and column: ");           scanf("%d %d", &r, &c);           for (i = 0;i < r;i++)              for (j = 0;j < c;j++) {                 printf("\tEnter value of matrix[%d][%d]: ", i, j);                 scanf("%d", &matrix[i][j]);              }           print\_matrix(matrix, r, c);           printf("\t------------------------\n");           tra\_matrix(matrix, r, c);           break;        case 3:           printf("\n\t Enter row and column: ");           scanf("%d %d", &r, &c);           for (i = 0;i < r;i++)              for (j = 0;j < c;j++) {                 printf("\tEnter value of matrix[%d][%d]: ", i, j);                 scanf("%d", &matrix[i][j]);              }           printf("\n\n\tSecond matrix\n");           for (i = 0;i < r;i++)              for (j = 0;j < c;j++) {                 printf("\tEnter value of matrix[%d][%d]: ", i, j);                 scanf("%d", &m2[i][j]);              }           matrix\_sum(matrix, m2, r, c);           break;        case 4:           printf("\n\t Enter row and column: ");           scanf("%d %d", &r, &c);           for (i = 0;i < r;i++)              for (j = 0;j < c;j++) {                 printf("\tEnter value of matrix[%d][%d]: ", i, j);                 scanf("%d", &matrix[i][j]);              }           printf("\n\n\tSecond matrix\n");           for (i = 0;i < r;i++)              for (j = 0;j < c;j++) {                 printf("\tEnter value of matrix[%d][%d]: ", i, j);                 scanf("%d", &m2[i][j]);              }           matrix\_sub(matrix, m2, r, c);           break;        case 5:           printf("\n\t Enter row and column: ");           scanf("%d %d", &r, &c);           for (i = 0;i < r;i++)              for (j = 0;j < c;j++) {                 printf("\tEnter value of matrix[%d][%d]: ", i, j);                 scanf("%d", &matrix[i][j]);              }           printf("\n\n\tSecond matrix\n");           for (i = 0;i < r;i++)              for (j = 0;j < c;j++) {                 printf("\tEnter value of matrix[%d][%d]: ", i, j);                 scanf("%d", &m2[i][j]);              }           matrix\_mul(matrix, m2, r, c);           break;        case 6:           printf("\n\t Enter row and column: ");           scanf("%d %d", &r, &c);           for (i = 0;i < r;i++)              for (j = 0;j < c;j++) {                 printf("\tEnter value of matrix[%d][%d]: ", i, j);                 scanf("%d", &matrix[i][j]);              }           matrix\_row\_col\_sum(matrix, r, c);           break;        case 7:           printf("\n\t Enter row and column: ");           scanf("%d %d", &r, &c);           for (i = 0;i < r;i++)              for (j = 0;j < c;j++) {                 printf("\tEnter value of matrix[%d][%d]: ", i, j);                 scanf("%d", &matrix[i][j]);              }           magic\_matrix(matrix, r, c);           break;        }     } while (1);  }  void print\_matrix(int m[MAX][MAX], int r, int c) {     int i, j;     for (i = 0;i < r;i++) {        for (j = 0;j < c;j++) {           printf("\t%d", m[i][j]);        }        printf("\n");     }  }  void tra\_matrix(int m[MAX][MAX], int r, int c) {     int i, j, tm[MAX][MAX];     for (i = 0;i < r;i++) {        for (j = 0;j < c;j++) {           tm[i][j] = m[j][i];           printf("\t%d", tm[i][j]);        }        printf("\n");     }  }  void matrix\_sum(int m1[MAX][MAX], int m2[MAX][MAX], int r, int c) {     int i, j, s = 0;     print\_matrix(m1, r, c);     printf("\t------------------------\n");     print\_matrix(m2, r, c);     printf("\t------------------------\n");     for (i = 0;i < r;i++) {        for (j = 0;j < c;j++) {           s = m1[i][j] + m2[i][j];           printf("\t%d", s);        }        printf("\n");     }  }  void matrix\_sub(int m1[MAX][MAX], int m2[MAX][MAX], int r, int c) {     int i, j, s = 0;     print\_matrix(m1, r, c);     printf("\t------------------------\n");     print\_matrix(m2, r, c);     printf("\t------------------------\n");     for (i = 0;i < r;i++) {        for (j = 0;j < c;j++) {           s = m1[i][j] - m2[i][j];           printf("\t%d", s);        }        printf("\n");     }  }  void matrix\_mul(int m1[MAX][MAX], int m2[MAX][MAX], int r, int c) {     int i, j, k, s;     print\_matrix(m1, r, c);     printf("\t------------------------\n");     print\_matrix(m2, r, c);     printf("\t------------------------\n");     for (i = 0;i < r;i++) {        for (j = 0;j < c;j++) {           s = 0;           for (k = 0;k < r;k++) { // or k<c; because r=c              s += m1[i][k] \* m2[k][j];           }           printf("\t%d", s);        }        printf("\n");     }  }  void matrix\_row\_col\_sum(int m[MAX][MAX], int r, int c) {     int i, j, sc = 0, sr[MAX] = { 0 }, total = 0;     for (i = 0;i < r;i++) {        for (j = 0;j < c;j++) {           sc += m[i][j];           sr[j] += m[i][j];           printf("\t%d", m[i][j]);        }        printf("\t:%d\n", sc);        total += sc;        sc = 0;     }     for (i = 0;i < r;i++) {        total += sr[i];        printf("\t:%d", sr[i]);     }     printf("\t:%d\n", total);  }  void magic\_matrix(int m[MAX][MAX], int r, int c) {     int i, j, sc = 0, sr[MAX] = { 0 }, sx = 0, sy = 0, n = r - 1;     printf("\t------------------------\n");     printf("\tMagic matrix: \n");     for (i = 0;i < r;i++) {        for (j = 0;j < c;j++) {           sc += m[i][j];           sr[j] += m[i][j];           printf("\t%d", m[i][j]);           if (i == j) { sx += m[i][j]; }           if (i == n) { sy += m[i][j]; }        }        printf("\t:%d\n", sc);        sc = 0;        n--;     }     for (i = 0;i < r;i++) {        printf("\t:%d", sr[i]);     }     printf("\n\n\tsum of sx=%d\n\tsum of sy=%d\n", sx, sy);  }  void name\_sort(char name[MAX][MORE], int r) {     //int i;     //char first[r];  }  int menu() {     int x;     printf("\n\t 0. Exit program");     printf("\n\t 1. print matrix");     printf("\n\t 2. row column transpose matrix");     printf("\n\t 3. 2 matrix addition");     printf("\n\t 4. 2 matrix subtraction");     printf("\n\t 5. 2 matrix multiplication");     printf("\n\t 6. matrix sum row and column");     printf("\n\t 7. magic matrix");     printf("\n\t Enter number: ");     scanf("%d", &x);     return x;  }  **Output:**  0. Exit program  1. print matrix  2. row column transpose matrix  3. 2 matrix addition  4. 2 matrix subtraction  5. 2 matrix multiplication  6. matrix sum row and column  7. magic matrix  8. name sorting  Enter number: 1  Enter row and column: 2 2  Enter value of matrix[0][0]: 1  Enter value of matrix[0][1]: 2  Enter value of matrix[1][0]: 3  Enter value of matrix[1][1]: 4  1 2  3 4  Enter number: 2  1 2  3 4  ------------------------  1 3  2 4    Enter number: 3  Enter row and column: 2 2  Enter value of matrix[0][0]: 1  Enter value of matrix[0][1]: 2  Enter value of matrix[1][0]: 3  Enter value of matrix[1][1]: 4  Second matrix  Enter value of matrix[0][0]: 5  Enter value of matrix[0][1]: 6  Enter value of matrix[1][0]: 7  Enter value of matrix[1][1]: 8  1 2  3 4  ------------------------  5 6  7 8  ------------------------  6 8  10 12  Enter number: 4  5 6  7 8  ------------------------  1 2  3 4  ------------------------  4 4  4 4  Enter number: 5  1 2  3 4  ------------------------  5 6  7 8  ------------------------  19 22  43 50  Enter number: 6  1 2 :3  3 4 :7  :4 :6 :20  Enter number: 7  ------------------------  Magic matrix:  1 2 :3  3 4 :7  :4 :6  sum of sx=5  sum of sy=0  **Output**  return x;  **Output**  return x;  **Output**  return x;  **Output** |

**bus\_data.txt**

|  |
| --- |
| Ashapura Bus  Ahmedabad-Khambhalia,Ahmedabad|Limbdi|Chotila|Rajkot|Dhrol|Jamnagar|Khambhalia  Rajkot-Dwarka,Rajkot|Jetpur|Junagadh|Somnath|Porbandar|Dwarka  Bhuj-Ahmedabad,Bhuj|Bhachau|Morbi|Chotila|Ahmedabad  Bhavnagar-Surat,Bhavnagar|Botad|Surendranagar|Ahmedabad|Anand|Surat  Junagadh-Dwarka,Junagadh|Dhoraji|Porbandar|Khambhalia|Dwarka  Gandhidham-Bhavnagar,Gandhidham|Bhachau|Morbi|Rajkot|Botad|Bhavnagar  Surat-Rajkot,Surat|Vadodara|Limbdi|Chotila|Rajkot  Jamnagar-Bhavnagar,Jamnagar|Khambhalia|Rajkot|Botad|Bhavnagar  Palanpur-Ahmedabad,Palanpur|Mehsana|Gandhinagar|Ahmedabad  Bhuj-Surat,Bhuj|Bhachau|Morbi|Vadodara|Surat  Deep Travels |

GitHub Link: <https://github.com/VishalChudasama08/MCA_Projects/tree/main/Bus_Booking_System_In_C_Language>

Run In VS Code OR Direct Run .exe File For Batter Formatted Output

Thank You