# C PROGRAMMING

1. Write a program for matrix multiplication?

```c
#include<stdio.h>
int main()
{
 int a[20][20],b[20][20],c[20][20],m,n,i,j;
 printf("Enter the size of matrices:\n");
 scanf("%d%d",&m,&n);
 printf("Enter the value of A matrix:\n");
 for(i=0;i<m;i++)
 {
 for(j=0;j<n;j++)
 {
 scanf("%d",&a[i][j]);
 }
 }
 printf("Enter the value of B matrix:\n");
 for(i=0;i<m;i++)
 {
 for(j=0;j<n;j++)
 {
 scanf("%d",&b[i][j]);
 }
 }
 printf("Sum of two matrices:\n");
 for(i=0;i<m;i++)
 {
 for(j=0;j<n;j++)
 {
 c[i][j]=a[i][j]+b[i][j];
 printf("%d\t",c[i][j]);
 }
 printf("\n");
 }
}
```
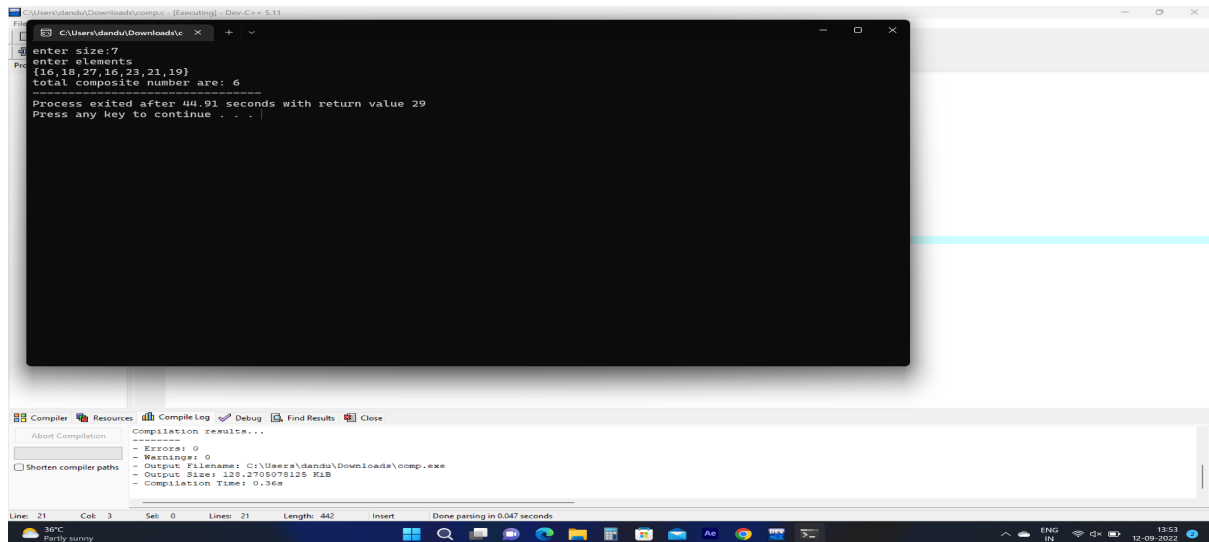
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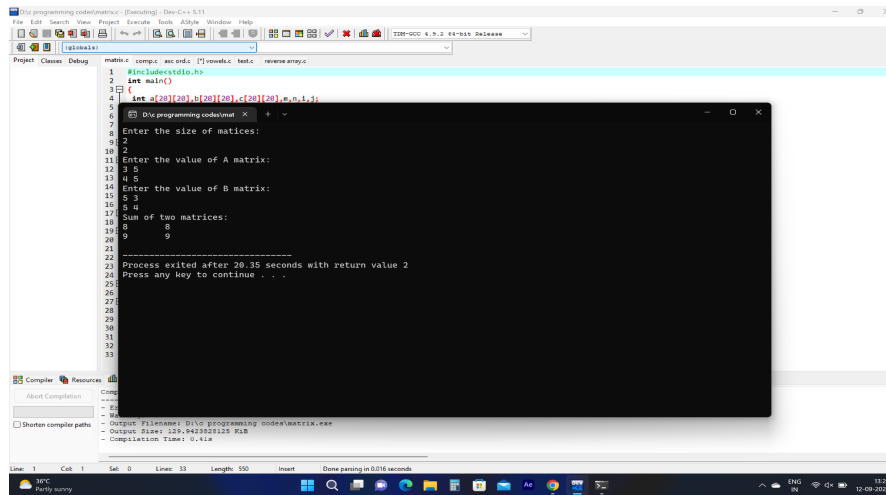
2.Write a program to find the number of composite numbers in an array of elements

```c
#include<stdio.h>
void main (){
    int i,n,a[100],count=0;
    printf("enter size:");
    scanf("%d",&n);
    printf("enter elements\n");
    for(i=0;i<n;i++){
        scanf("%d",&a[i]);
    }
    for(i=0;i<n;i++){
      if(a[i]==2){
          continue;
      }
       else if(a[i]%2==0){
        count++;
       }
    }
       if(count>2){
       }
       printf("total composite number are: %d",count);
}
```
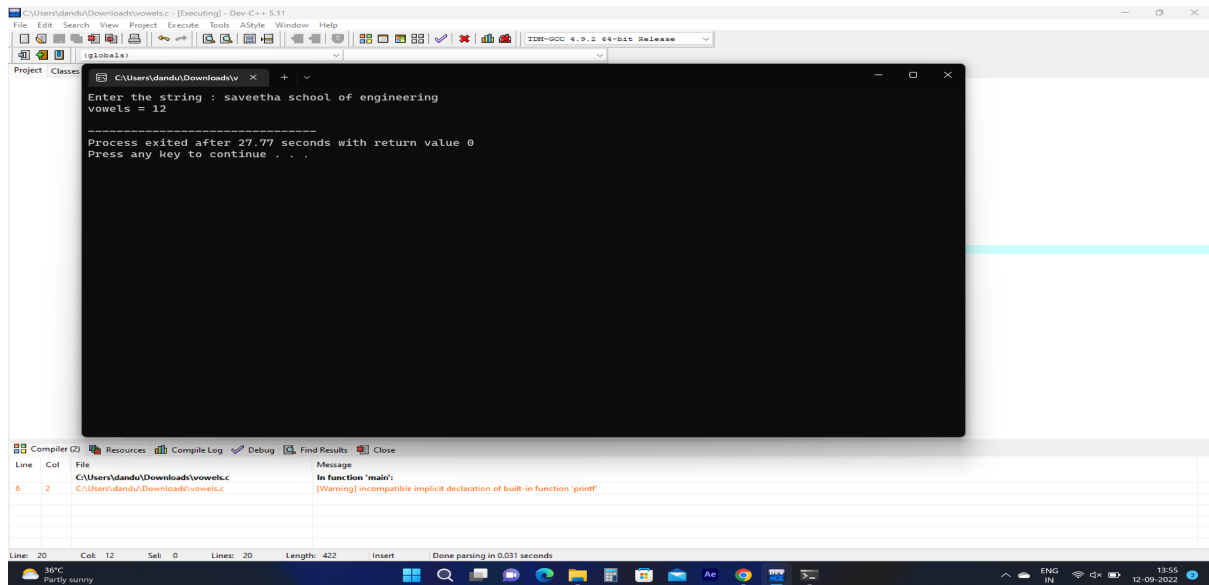
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3.Write a program to print the number of vowels in the given statement?

```c
#include <string.h>
int main()
{
 char s[1000];
 int i,vowels=0,consonants=0;
 printf("Enter the string : ");
 gets(s);
 for(i=0;s[i];i++)
 {
 if((s[i]>=65 && s[i]<=90)|| (s[i]>=97 && s[i]<=122))
 {
 if(s[i]=='a'||
s[i]=='e'||s[i]=='i'||s[i]=='o'||s[i]=='u'||s[i]=='A'||s[i]=='E'||s[i]=='I'||s[i]=='O' ||s[i]=='U')
 vowels++;
 else
 consonants++;
 }}

 printf("vowels = %d\n",vowels);
 return 0;}
```
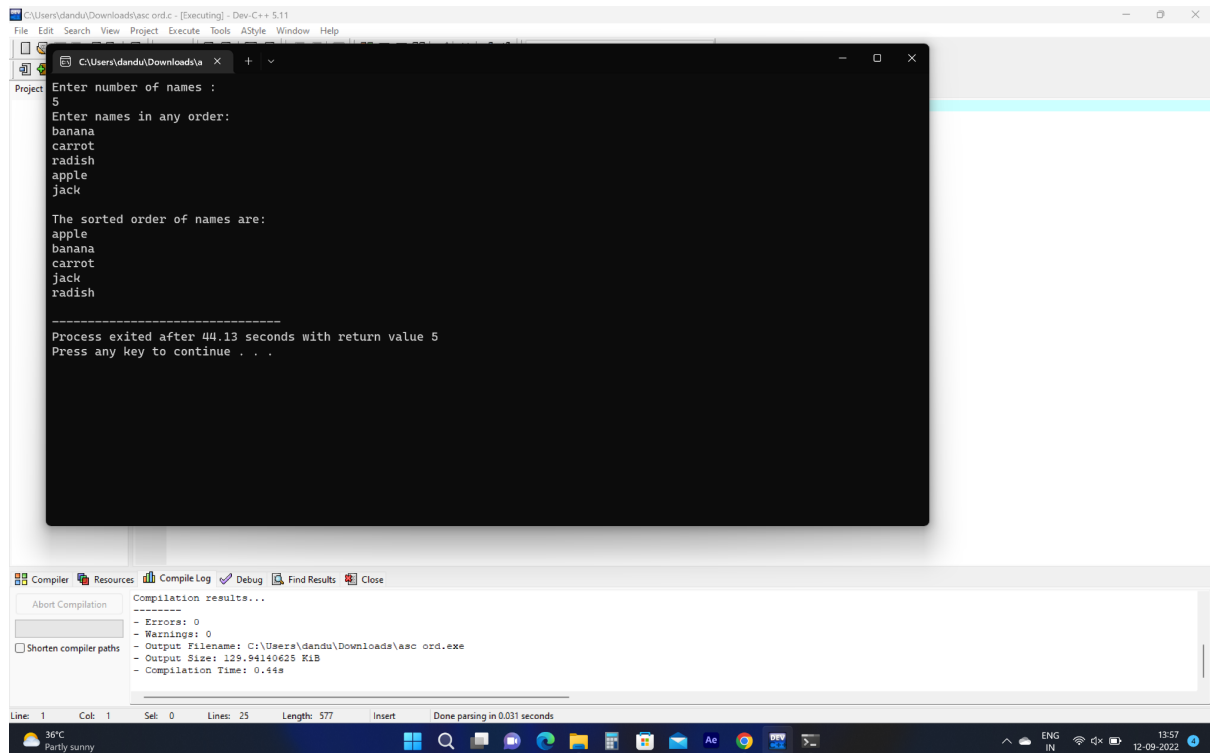
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4. Write a program that would sort a list of names in alphabetical order Ascending or Descending, choice get from the user?

```c
#include<stdio.h>
#include<string.h>
main(){
  int i,j,n;
  char str[100][100],s[100];
  printf("Enter number of names :\n");
  scanf("%d",&n);
  printf("Enter names in any order:\n");
  for(i=0;i<n;i++){
    scanf("%s",str[i]);
  }
  for(i=0;i<n;i++){
    for(j=i+1;j<n;j++){
      if(strcmp(str[i],str[j])>0){
        strcpy(s,str[i]);
        strcpy(str[i],str[j]);
        strcpy(str[j],s);
      }
    }
  }
  printf("\nThe sorted order of names are:\n");
  for(i=0;i<n;i++){
    printf("%s\n",str[i]);
  }
}
```

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5. Find the Mean, Median, Mode of the array of numbers?

```c
#include<stdio.h>
main()
{
int i,j,a[20]={0},sum=0,n,t,b[20]={0},k=0,c=1,max=0,mode;
float x=0.0,y=0.0;
printf("\nEnter the limit\n");
scanf("%d",&n);
printf("Enter the set of numbers\n");
for(i=0;i<n;i++)
 {
 scanf("%d",&a[i]);
 sum=sum+a[i];
 }
x=(float)sum/(float)n;
printf("Mean\t= %f",x);

for(i=0;i<n;i++)
 {
 for(j=i+1;j<n;j++)
  {
  if(a[i]>a[j])
   {
   t=a[i];
   a[i]=a[j];
   a[j]=t;
```

```c
  }
 }
 }
if(n%2==0)
y=(float)(a[n/2]+a[(n-1)/2])/2;
else
y=a[(n-1)/2];
printf("\nMedian\t= %f",y);

for(i=0;i<n-1;i++)
 {
 mode=0;
 for(j=i+1;j<n;j++)
  {
  if(a[i]==a[j])
   {
    mode++;
   }
  }
 if((mode>max)&&(mode!=0))
  {
  k=0;
   max=mode;
   b[k]=a[i];
   k++;
  }
 else if(mode==max)
  {
  b[k]=a[i];
  k++;
  }
 }
for(i=0;i<n;i++)
 {
 if(a[i]==b[i])
 c++;
 }
if(c==n)
printf("\nThere is no mode");
else
 {
 printf("\nMode\t= ");
 for(i=0;i<k;i++)
 printf("%d ",b[i]);
}
}
```

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6.Write a program to reverse an array
```c
#include <stdio.h>
int main(){
    int num, i, j, array1[50], array2[50];
    printf("Enter no of elements in array\n");
    scanf("%d", &num);
    printf("Enter array elements\n");
    for (i = 0; i < num ; i++)
        scanf("%d", &array1[i]);
    for (i = num - 1, j = 0; i >= 0; i--,j++)
        array2[j] = array1[i];
    for (i = 0; i < num; i++)
        array1[i] = array2[i];
    printf("The reversed array:\n");
    for (i = 0; i< num; i++)
        printf("%d\n", array1[i]);
    return 0;
}
```
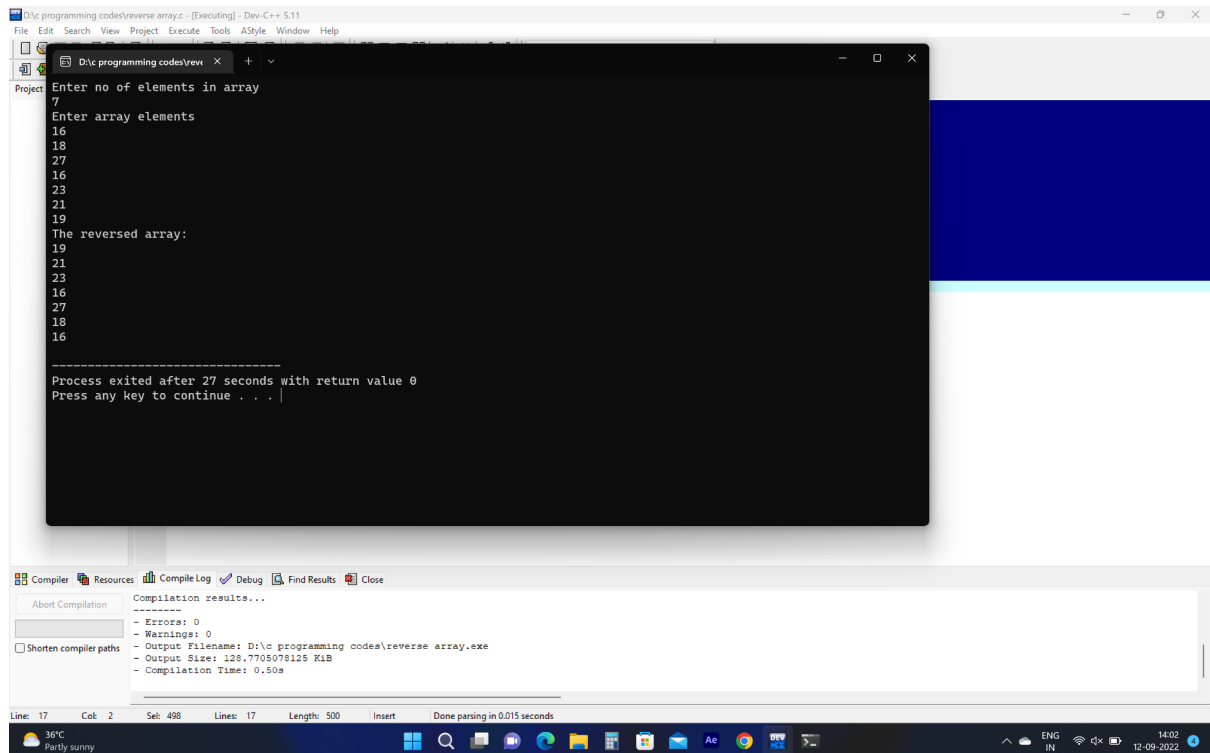
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7.write a program to check whether the number divisible by 2 then print the given number even otherwise odd.?

```
#include<stdio.h>
int main()
{
 int num;
  printf("enter the number :");
  scanf("%d",&num);
 if(num==0)
     printf("input cannot be 0");
 else if(num<=0)
        printf("input cannot be negative");
 else if(num%2==0)
     printf("the given number is even");
 else if(num%2!=0)
         printf("the given number is odd");
}
```
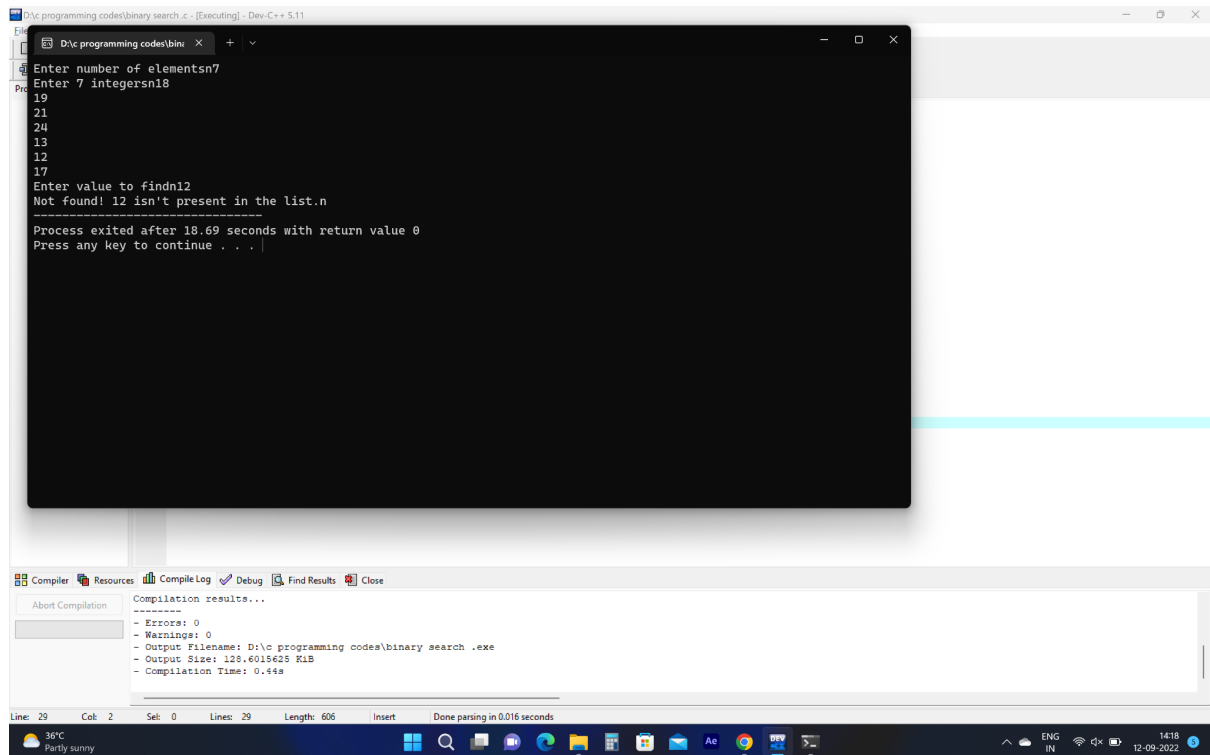
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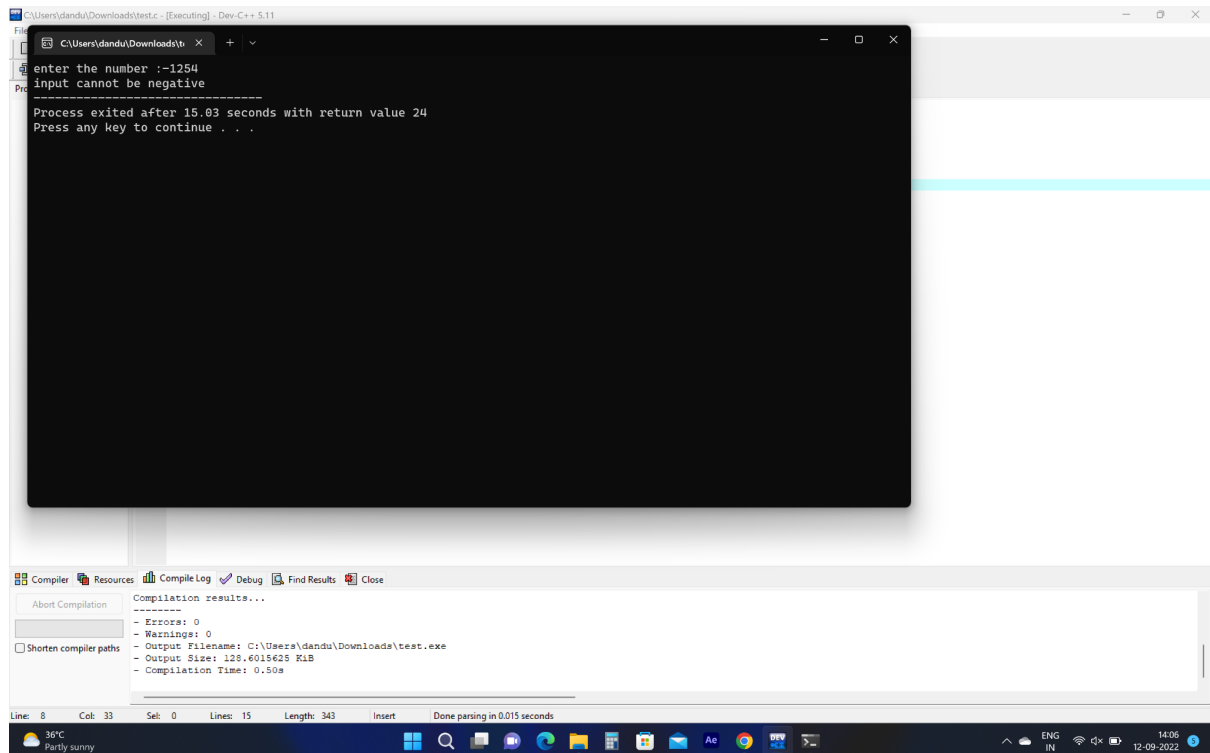
8. Write a program to search the given element using binary search method and display its position in a linear array?

```c
#include <stdio.h>
int main()
{
int i, low, high, mid, n, key, array[100];
printf("Enter number of elementsn");
scanf("%d",&n);
printf("Enter %d integersn", n);
for(i = 0; i < n; i++)
scanf("%d",&array[i]);
printf("Enter value to findn");
scanf("%d", &key);
low = 0;
high = n - 1;
mid = (low+high)/2;
while (low <= high) {
if(array[mid] < key)
low = mid + 1;
else if (array[mid] == key) {
printf("%d found at location %d.n", key, mid+1);
break;
}
else
high = mid - 1;
mid = (low + high)/2;
```

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}
if(low > high)
printf("Not found! %d isn't present in the list.n", key);
return 0;
}