**Data Structure**

1. Insertion in linked list

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| #include<iostream.h>  #include<malloc.h>  #include<conio.h>  int main()  {  int n,i,j,a[10];  clrscr();  struct node  {  int data;  struct node \*link;  }\*node[100];  cout<<"Enter size of array: ";  cin>>n;  cout<<endl;  for(i=0; i<n; i++){  node[i]=(struct node\*)malloc(sizeof(struct node));  node[i]->data = NULL;  }  for(i=0; i<n; i++){  cout<<"Enter value"<<(i+1)<<" ";  cin>>node[i]->data;  }  for(i=0; i<n; i++){  node[i]->link=node[i+1];  }  node[n-1]->link=NULL;  cout<<"You Entered : -\n";  for(i=0; i<n; i++){  cout<<node[i]->data<<endl;  }  getch();  } |

1. Selection short

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| //selection sort  #include<stdio.h>  #include<conio.h>  int main()  {  int a[40],b,n,c,tmp;  printf("Enter size of array ");  scanf("%d",&n);  printf("Enter the values->\n");  for(b=1;b<=n;b++)  {  printf("%d. ",b);  scanf("%d",&a[b]);  }    for(b=1;b<=n;b++)  {  for(c=b+1;c<=n;c++)  {  if(a[b]>a[c])  {  tmp=a[b];  a[b]=a[c];  a[c]=tmp;  }}}    printf("Values in sorted list\n");  for(b=1;b<=n;b++)  {  printf("\n%d. %d",b,a[b]);  }  } |

1. Bubble short

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| //bubble sort  #include<stdio.h>  #include<conio.h>  int main()  {  int a[40],b,n,c,tmp;  printf("Enter size of array ");  scanf("%d",&n);  printf("Enter the values->\n");  for(b=1;b<=n;b++)  {  printf("%d. ",b);  scanf("%d",&a[b]);  }    for(b=n;b>=1;b--)  {  for(c=1;c<=b;c++)  {  if(a[c]>a[b])  {  tmp=a[b];  a[b]=a[c];  a[c]=tmp;  }}}    printf("Values in sorted list");  for(b=1;b<=n;b++)  {  printf("\n%d. %d",b,a[b]);  }  } |

1. Add matrix using functions

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| #include<stdio.h>  #include<conio.h>  void read\_arr(int a[10][10],int row,int col)  {  int i,j;  for(i=1;i<=row;i++)  {  for(j=1;j<=col;j++)  {  scanf("%d",&a[i][j]);  }  }  }  void add\_arr(int ma[10][10],int mb[10][10],int mc[10][10],int row,int col)  {  int i,j;  for(i=1;i<=row;i++)  {  for(j=1;j<=col;j++)  {  mc[i][j]=ma[i][j]+mb[i][j];  }  }  }  void print\_arr(int mc[10][10],int row,int col)  {  int i,j;  for(i=1;i<=row;i++)  {  for(j=1;j<=col;j++)  {  printf("%d ",mc[i][j]);  }  printf("\n");  }  }  int main()  {  int m1[10][10],m2[10][10],m3[10][10],i,j,row,col;    printf("Enter no. of row and column\n");  scanf("%d%d",&row,&col);    printf("Enter 1st matrix\n");  read\_arr(m1,row,col);    printf("Enter 2nd matrix\n");  read\_arr(m2,row,col);    add\_arr(m1,m2,m3,row,col);  printf("\nAddition of two matrix is\n");  print\_arr(m3,row,col);  } |

1. Deletion of a value in array

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| #include<iostream.h>  #include<conio.h>  int main()  {  int arr[100],p,n,c;  clrscr();  cout<<"Enter number of elements in array\n";  cin>>n;    cout<<"Enter "<<n<<" element\n";  for(c=1;c<=n;c++)  {  cout<<"\_\_\_\_\_\_\_\_\_\_\n|("<<c<<")| ";  cin>>arr[c];  cout<<"|";  }  cout<<"\nEnter the location where you wish to delete element\n";  cin>>p;    if(p>n)  {  cout<<"Deletion not possible\n";  }  else  {  for(c=p;c<=n;c++)  {  arr[c]=arr[c+1];  cout<<"Resultent:-\n";  for(c=1;c<n;c++)  {  cout<<"\_\_\_\_\_\_\_\_\_\_\_\_\n|("<<c<<")| "<<arr[c]<<"|\n";  }  }  getch();  } |

1. Multiplication of Matrix

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| #include<iostream.h>  #include<conio.h>  int main()  {  clrscr();  int a[2][2],b[2][2],c[2][2],i,j,k;  cout<<"Enter elements in first matrix\n\n";  for(i=0;i<2;i++)  {  for(k=0;k<2;k++)  {  cout<<"a"<<i<<k<<" ";  cin>>a[i][k];  }  }    cout<<"\nEnter the elements of 2nd mayrix\n\n";  for(k=0;k<2;k++)  {  for(j=0;j<2;j++)  {  cout<<"b"<<k<<j<<" ";  cin>>b[k][j];  }  }    //multiplication of matrix  for(i=0;i<2;i++)  {  for(j=0;j<2;j++)  {  c[i][j]=0;  for(k=0;k<2;k++)  {  c[i][j]=c[i][j]+a[i][k]\*b[k][j];  }  }  }    cout<<"\nThe result is :-\n";  for(i=0;i<2;i++)  {  for(j=0;j<2;j++)  {  cout<<"c"<<i<<j<<" "<<c[i][j]<<endl;  }  }  getch();  } |

1. Searching

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| /\*  Searching  \*/  #include<iostream.h>  #include <conio.h>  int main()  {  int c,n,a[100],x,check;  clrscr();  cout<<"Enter maximum size of list ";  cin>>n;  cout<<"Enter "<<n<<" numbers\n";  for(c=1;c<=n;c++)  {  cout<<"\_\_\_\_\_\_\_\_\_\n|("<<c<<") |";  cin>>a[c];  cout<<"|";  }  cout<<"\nEnter a number to search ";  cin>>x;  for(c=1;c<=n;c++)  {  if(a[c]==x)  {  cout<<"The number "<<x<<" is found at location ("<<c<<")";  check=1;  break;  }  else{  check=0;  }  }  if(check==0){  cout<<"\n"<<x<<" is not found";  }  getch();  } |

1. Factorial of a number

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| --- |
| #include<stdio.h>  #include<conio.h>  int main()  {  int fact=1,a;  printf("enter the value");  scanf("%d",&a);  while(a>=1)  {  fact=fact\*a;  a--;  }  printf("%d",fact);    } |

1. Demonstrate shorting

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| --- |
| #include<iostream.h>  #include<conio.h>  int main()  {  int i,imin,j,n,temp,a[100];  clrscr();  cout<<"Enter number of element\n";  cin>>n;  cout<<"\nEnter "<<n<<" elements\n";  for(i=1;i<=n;i++)  {  cout<<"\_\_\_\_\_\_\_\_\_\_\n| "<<i<<". | ";  //enter the no. of elements  cin>>a[i];  }  for(i=1;i<=n-1;i++)  {  imin=i;  for(j=i+1;j<=n;j++)  {  if(a[imin]>a[j])  {  imin=j;  }}  //this loop is used for insert minimum value(imin) in first element(i)  if(imin!=i)  {  temp=a[i];  a[i]=a[imin];  a[imin]=temp;  }}  cout<<"\nSorted list in ascending order:\n";  //this loop is used for print list in sort list  for(i=1;i<=n;i++)  {  cout<<"\_\_\_\_\_\_\_\_\_\_\_\_\n| "<<i<<". | "<<a[i]<<" |\n";  }  getch();  } |

1. Switch statement

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| #include<stdio.h>  #include<conio.h>  int main()  {  char o;  int num1,num2;  printf("select an operator either + or - or \* or /\n");  scanf("%c",&o);  printf("\nEnter two operands\n");  scanf("%d%d",&num1,&num2);  switch(o)  {  case '+':  printf("%d + %d = %d",num1,num2,num1+num2);  break;  case '-':  printf("%d - %d = %d",num1,num2,num1-num2);  break;  case '\*':  printf ("%d \* %d = %d",num1,num2,(num1\*num2));  break;  case '/':  printf("%d / %d = %d",num1,num2,num1/num2);  break;  default:  printf("Error! operator is not correct");  break;  }  } |