ASSIGNMENT-4

Program to inserting a not at any Given position of include estations of include 2 Stalib. W Struct node Sol state) were it int data; Structrode of next; I'd toll of of of 4 thead; Void Create list lint n); Void insert_at_given_Position (intdata, introsition) Yord displaylist (1) intrain() int nidota, posi, int his will be print+ ("In Enter the total number of rodus!"); " Scant ("1.d", 2n) Create List (n);

Print fo" In the list is In")

display list (1')

```
print + l"In Enter the position: ")
 Sant 1".1.d", & POS)
 printf l'In Enter the desta to insert at position. I'd
          of the list: ", POS)
 S(ant [".1.4", & data);
  insert_at_given_Position (data, pos)
   print (" In In The list is In"))
   display list();
                       March ( read list that of
    Mord inert at-given Position (intotaling
                          All solywards biold
Void (restelist linta)
 Struct node & new node, + temp?
   intolatoring a recomme lately with all from
  head = (Street node +) malloc (Si Zeaf (Struet node));
   if Chead = = Null)
2 print + (" unable to allower memory . 11)
```

```
else
                                   had great party
Entit ["In Enter the data of node: ");
Sant 1".1.d", & data);
head -> data = data.
 head-) nent = Mully
temps head;
 torci=2; i <= n', i++)
                                      o burst by
                      gant & wall was subar to will.
newnode = (Struct rode +) malloc (Size of (Struct rode 1)
if (newnode == kell)
 print+(" unable to allocate memory."))
 break ,
elac
 printf!" In Enter the data of rodulid:", i)
 Sant ("Id", adota)) back in
 Newrode -> data = data;
 rewrode -1 rent= nul;
 -temp - ) Neut = new Node;
```

```
temp= temp=) neut;
Void insect-at-given-Position (interest introsition)
  int lount = 0;
    Howet rook + new Node + temp!
  New Mode = (Struct rode) + malloc (Size of (Struct rock));
   ( huy == wod == Hul)
    print !" wrabii to allotate memory.")
   while (temp-) rent 1 = NULL and (Cposition-2) = went)
  7 (ount = (ount+1)
```

```
H (Position-I)== lount)
  new rock -) data = data;
 new node -) next = temp -) next;
  femp) rent = new rook.
woid display list ()
it ( head == NULL)
                            tied diaphylistify
 print+(" list is empty!))
  temp = head jo down lated with the
 while (temp! = NULL)
 print fl" l'd It", temp-sodata),
  temp = temp - ) tent;
J 3 Print("In")
                                     Scanned with CamScanner
```

deleting a now from the beginning of the linker # include 25tdions frelude LStallibins Struct rode & int data', Street node + rext; I + head; () they harding plan Word (restablish cint n) word delite firstrade (); (Um4 == boid) + word display lister int mains) ("phymoni til ") thing intr, choice prints ("Enter the total number of rodes: "); Sant 1". 1.d, en) (veate list (n); priat+1" In Pata in the lighth" alistaylist 11%

```
pintfl'In frem 1 to delete first node: 1915-
(cant 1".1.d", & choice);
it (Choice == 1)
    delete first rode();
 print+ l"In Data in the list In")
 display list (1) solver (" bon how ") bon and
  jutwono',
coid (reate list (int n)
 Struct node + new Node + temp;
  int data, i;
 had= (Struct rode +) malloc (Size of (Struct rode));
  it (head = = Null)
                 ( otch & "b") 1 to
    print (" unable to allocate memory.");
   elm
     printf(" Enter the data of rode 1 !")
      scart ("ilid", R dota)".
```

```
heard - data - data;
       head -) rent = NW;
        temp = head',
   for (1=2; iz= N; H+)
                     al toil who is almost all the a
     New rode = (Struct node+) malloc (Size of (Struct rody)
    if ( new rode = = NULL)
       print+("unable to allocate memory.");
        break;
                 grant to other thouse the thought
     Clac
( stant & town ( passis) pollon ( passon turte) - bold
      print of "Enter the data of node ! I'd "(i))
        Scort 1" led", L data),
     nim Node -) deta = date;
       newwood -> nent= num;
       femp -) rent = newrode;
        temp = temp => rent;
```

```
print I" singly liked list (readed Succensfully mil)
void delete First Node ()
 Street rode & to Delete;
  it (head == New)
  S print+ ("list is abready empty.");
                               ( hour : god) of to
     to pulete = head ;
      mad = mad -> rent july 1/6.1. stat " 1 hing
    print + (" In Posta deleted = ( d In'ly to Delete -) data);
     free (to petete),
     print (" Succentuly deleted first pode From Uztla")
```

```
display list()
it ( head == NULL)
  print + 1" list is empty.");
    temp = head ',
   while (temp! = NULL)
  print 1 " pata=. 1.d ( n", temp ) data);
  destempest tempes result by to between store of ") I thing
```

3 deleting a node from the end of the Unked Virt. #include / Stdiorh) # include 1stalibih Structrode & il of toll all and and it is int dota", struct rode + rent;] + head roid (resterist list n); noid delete last rode (1', (11 tri) tri) steam ties voide display list (); graph & abancus & don kurth int main () in atom his int n, Choice . I we be 140 will alway (" then traves) hard print + ("Enter the total number of nodes: "); (was beel) 4 Stort 1" .lial" Ln1; (resteriot (n)), mentioned at adding the large print + ("Inpata in the list la"); displaylint (1)

```
print + ("In Ren 1 to delete last node: "1"
Scant (".l.d," & choice);
                                . may 10 1 thought
  i+ (Choice == 2)
                                called the shall
     alelete lost rode ()
  printf (" In pata in the list In");
  display list (1)
                                 · bon "when they
      secturo,
                            soid (reade fint list n).
World (reatclist linta)
                            (1) was tool states how
                            in the obsplaying is
  Strut noch * newnood, * temp;
                                         ( Incom to
   int data, i.,
    had= (Struet rode + ) mallor (Size Of (Struet rode ??)
   total 1"Exter the total number of mous "!
 it (head = = NUU)
                                "Toxx" had "I have !
      printf " was u to allocate memory. ");
                 illed will other other of the lang
                                        (1) b-it welgish
```

```
print ("Enter the data of node 1:"),
(ant 1".1.d", & data);
 fund -) data = data;
 head -> rent = NULL;
  temp=head')
 for ci=2; 1 2= n; 1++)
  rew Node = (Struct rode #) malloc (Site of (Struct rode)
 H (rew Node == NW)
   print of " unable to allocate memory!")
    break ;
    printt (" Enter the data of rode !d:", ");
    Scoret 1" led", 2 dota )
   remode -> data = data;
    Now Node -> Nent = NULL )
    temp-) rent = new wood;
     temp = temp-rent;
```

```
when to other off world
print ("SINGLY LINKED LIST CREATED SU CCESSFULLY In").
You'd delete but node()
  Struct node + to Delete, + Secound last Node:
  to brode gosie) jellon (Fakor benfi) : abook u.
  if (head = = NUM)
                            ( Muy = wook way)
    print 1" list is abundy empty." 2' 200 " hang
    to pelety = had to solo wir
   Selound lastrood = head ; to ?
 while (to parte ) next 1= Nuy
                          on . han be shown with
      Secound last wode = to pelete;
                    = to pelety-> rent;
```

```
if (to Delete == head)
   feod = NUll;
elv
    Schoundlast node > rent = Null;
 free Hopeute) a mini bis
  print + (" success fully Deleted lost rode of list In")
 Void display list () boil to prove
 H (had == HULL) for to took
                    and a charton may a s
     print + (" list is empty.");
      temp = head;
       while (templ= MM)
```

print+c"pata=1.dln", temp-) dota);

temp=temp-) rent;

(4) I am very Sure that everyone is able to find middle index of soway one you know that index and end index of array, but there are Certain benefits of Using Start of Contrary over (stout fend) /2,

The every first way of finding index is mid = (Starut + end)/2

But thou is problem with this approach, what it wall of stout or end or both is INTIMEMAN, it will come overegon overflow.

the better way of calculation mid indensity
mid=start+ (end-start) /2

```
Algorithm:
Jernary Search Carray, start, end, Key)
                         market Market Wall on Arme
  Begin
   it start 2= end then
     mid first := start + (end - start) 3
    mid secound: = midfirst + (end -stout) 13
    itarray [mid first] = key then
       section mid firstals privaries from
    it array [mid Sccourd] = Key then
       return mid secould be made with I metro!
     it key Larray [midfirst] then !
       (all ferrory Sweet Carray, start, mid first-1, key)
    it key > array [ mid, Secound ] then
      (all terrory Search Corray mid first +1, and skey)
      elv
        Call terrary Search (away, mid first+1, mid secound-1, key)
     getwen invalid lastion
           Mary file file & whom it is also
                                 121.1 2.11
      End +
```