## Data stoructures and Algorithms Alsignment-4 Kosai Abhinav CSE-F AP19110010339 stinclude < stdio. h> #includexstallib h> Hauch Node { int data; 12 th March 1 at 1 the stanuct Node + next; stanct Node + insest ( Stanuck Node + head, int value, size te position) stanuct Nodet delete Node (stanuct mode \* tread, int position); void paint-list (struct Node + head) main (int arge, chan targv[] ) Storuct Node + head = NULL' head = insert (head, 1,0); head = insert (head, 100, 1); head = insert (head, 21, 2); head = insert (head, 2,3); head = insert (head, 5, 4); perint ("Enty the nth position to insert: "); scanf (" x.d", cnum);

3;

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posint (" Enter -the data" ")
Scant ("xd", &n1);
head = insert (head, ni, num-1);
porint ligh (head))
 posintf(" Frite the Kth position you need to detecte.)
Scanf (4x24, 9d1))
delete Node ( nead, d1) >
                          ( to + 0 do do do
 point list (head)
 neturno;
Storuct Nodet insert/ struct Nodet head, int value,
                      ring type politic blocks is
 Size-+ position) {
  Size-t i=0) 1 1 day no 1 1 dell Jung
  Stouch Node + wovent Node;
  current Node = nalloc (size of + current Node);
  current Node -> data = value;
  Staucto Node ** next For position 2 & head;
  for (1=0; ix position we * rest for position & = NULL
                               11 11 : 1+t)
 4
     next for position = 2(+ next for position) - next;
     aurentrode -) next = * next For position;
    * next for position = count rode;
     neturn head;
                          Band A var Do
  3
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stanut Node + deletinade (stant Node + head,
                             int position) (
   Stanut nade + temp)
   Storuct Node op = head;
   int count =0;
   If (P== NULL) {
      pountf (" Linked list is empty"))
    if ( position = = 0){
      head = p-next;
    four (P);
      while (count < position-1 02 pl=NULL) [
   else f
            p=p-next;
     temp=p->next;
       P-> next = temp-) rext;
     fooc(temp);
     head=P)
 void print list (struct Node + head) [
        Struct Nodet i = head;
        while (i! = NULL) {
               print ("rd n", i-) data);
               1= 1-next)
```

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2
                         grand day day
#include estation >>
#Include Kstdib.hz
Struct Node
int data,
                            731111 4=911
   Stowet Node * next;
void push (struct Node ++ head-ret)
                         int new-data)
& struct No de * new-node =
        (storuct Node+) malloc (size of (stauct Node));
    new-node-)data = new-date;
    new-node -> next = (+ head- ret);
     (+ head-set) = new_node)
void parint List (staruct Node + heard)
    stauct node * temp = nead;
     while (temp! = NULL)
                              11 9 J 30
     d pountf(",d", temp-sdata);
    pount ( " n');

pount ( " n');
```

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vioid meage (stauct Node+p, staruct Node +xq)
   Storust Node + p_come = p, +2_ans = +2;
   Stanut Nocle +p_next +, +q-next;
   while ( P_au 1 = NULL le 2-aug 1 = NULL)
       P-next = P-aur ->next;
       9-next = 9-0000 -) next)
       9_cuss -> next = pe_next;
       P_augy -> next-= 9_augy)
       P_cuss = p_next;
        9-cus = 9-next;
int main()
  stanct Node +p= NULL, +q= NULL)
   push ( 2p, 3);
   push (& P, 2);
   push (8p, 1);
   parint ("First linked list is: \n");
   posint-List(p);
   push ( 22, 6))
   push (29,5);
   push ( ba, 4);
    pointf ("second linked list is: \n");
    porintrist (P);
    mage(P, & q))
    paintuist (P))
    setuano;
                                   Scanned with CamScanner
```

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void point (int and E), but is, but i)
 3) # include <stdio. 1>
               i((i,1,1) 2 -- (b. x. bx ]") } + 1 mineq
                1001 (int K=1) K<=j ) K++) (
                              pointf (" d" aon [K])
             point f(") in in it
void findsubassays (int and [7, Int a, int sum)
               Roy (int i=0; i<n, i++)
 5
              2 int sum-so-fan =0;
                       footlint j=V;i< n;j+t)
                                   sum-so-fant = a08[i]
                                    if (sum-so-face = = sum) & Man
                                              point f (and, i))
                                                                                                                   1(1)
                                          The state of the s
   int main()
                int over () = (3,4,-7,1,3,3,1,-43)
   2
                   int sum')
                   porint ("Enter K value: ");
                    Scare ("xd", 25um);
                      int n= street (and) | size of (ans(o));
                     Sind subourages (art, n, sum)
                     scheno)
         3
```

```
4) #includexstdio.hz
 #includexstdlib.h>
# define SIZE 5
 Int queue[sizE];
 int foront, Irean =0;
 int insert (int);
 void display();
 void main())
    while(1) {
      int chival;
     pointf("1. Insert In 2. display in 3. 8xit in");
     pointf ("Enter the choice");
     Scanf (47.d", Lch);
     switch (ch)
        case 1: point ("Enter the value to insert:")
              Scanf (4/d', & val)
              insest(val))
              boreak;
      case 2: display();
              break;
      case 3: exit(0);
             break;
      detault: pointf("worong Selection. Tory again");
3 33
```

```
Int invest (int val)
f
   if ( o reag == size)
      paintf ("Queue is full")
      pount queun[rear]=val;
void display ()
    int i)

if (sear = = foront)

f print ("Queue is empty")
  else

paint ("Reverse ordon es: "))

for (i=rear-1) i>= feont; i=-)
       { pointf (ay.d') queue [i]);
   2 pointf("\n");
   perint ("Alternate ordor is: ");
for (1=0femt ::
   for (1=0 feort ) i <= Sear-1; i++)
   ( if (ix 2 = = 0)
         -lix 2==0)
pointf(4xd "quene(i));
```

from 1 = terent; i== seas-1, i++) (= 18x1) +1 f pointf(4x.21, quour (i)) 3 pount (" \"); and the last to be a second

altern array is the data staucture that contains a collection of similar slata type elements whereas the linked list is considered as non painitile data iteructions contains a collection of unordered linked elements known as nodes.

- b) In an array, memory is assigned during complie time while in a linked list it is allocated during nun time.
- 9 In addition memory utilization is in inefficient in the array, memory utilization is efficient in linked list.

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(ii)
    #include <stdio. h>
  #include < stdlib.h>
   Staruct Node (
                       int data;
                        Stauch Node + next;
   void push (storuct Node + head - ret, int new-data)
              staruct Node* reunode =
                                       (stauct Node +) malloc (site of (staruct Node));
                new-node-solata = new-datas
                 new node - mext = (+ head - ret))
                  (+ head set) = new node;
void perint list 1 storuct Node + head)
                stouct Nocle *temp = head;
                  while (temp! = NULL)
                   { point(">d", temp->data);
temp = temp->next;
                                          The state of the s
                  2 ("\\");
                                                                                                1 1 9 all mi - for
```

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void melge (stauct Node ++ p, stanut Node + + 2)
  · Stauct Node + p-cusa = +P, +q-cias = +2)
    Storuct Node + prest a, +q-next;
    Struct Node + p-cural)
     P-curi = 9-curi,
     f curs = 9-curs ->next;
     Pourl = next = pours;
     P_cury = p_curry;
     *p.= p-aure;
    tq = 9_ cus;
int main ()
     Storuct Node + p = NULL, + q = NULL)
    push (&p, 3);
     push (2p,2);
     push (OP, 1)
     posintf("First linked lit is \n");
     point-list(P);
     pwh(89,6)
     Push (29,5);
     push (29,4) j
     pointf(" second linked list is \n");
      paint list (a);
```

who of a down the form melog ( &P, &q); Perint (ulist 1 is: 1)) + Inireq point List (P); parint ("vist a wi! ") third porintlist(a) July J - Train 9 getchoon(); 1-3 - By our married seturnos V Trong of my Mary of 191119 5.97 2P1110 1 = 17 11 198 1/119 A Good House 18. 92 Jalan active many plant many galaces 4 (91 45-17) and Interes a King a Bigge