(AUTONOMOUS) Shamshabad - 501 218, Hyderabad.

Page No. 22,

Void print Array (int amay (), int sne)

for (inti=0; i c size; i+e)

print ("/d", amay (i));

print ("in")

3

output
Enter the number of element

5
Enter the element

3
Enter the element
c

Enter the element

Enter the element

Intu the element

Before sorting 83214 After sorting 12348

out 210, Hyderabad.		
Page No. 21.	Date	
	Exp. No.	
6. write a program to implement Heap sort.		
#include <stdio.h></stdio.h>		
int size=0;		
void heapsort (intomayer, interce);		
void heapify (intarray (), int size, inti);		
void create (int array ());		
void create (int array (); void print Array (int mray (), intsize);		
int mains		
int ouray(10);		
Create (whoy);		
printfor ay (away, size);		
heapsort (anay, size);		
print Array (array, sice),		
3 void create (int conay (3)		
(read (int conay ())		
IN Minewoum,		
print ("Enter the number of elements in"),		
Start (" "/, d", en);		
for (give =0; size en; size + e)		
1 printfronter the element in")		
Scarf (a did', x new Num);		
of (size = = 0)		
Othay [o] = newnorm;		
eise		
across crize] = newnum;		
tex (1) 1= s120/2-1) 12=0; 1)		
*		

```
c program to impliment BST
#include <etdio.h>
#include e mallochy
Struct no de
    int data;
    Struct node * right child;
    Struct node * 18ft child;
 J* root = NULL, * temp;
 Struct node * insert (struct nude *, int);
 Struct node * search (struct node *, int);
  void morder (struct nod ~);
  void preorder (struct node");
  wid postorda (struct moder);
   Struct node & delete (struct node * 1 int).
    Strud node & find -min (struct node );
    void main()
       rout = inscrt (rout, i);
      insert (rout, 4)
      insert (rout, 5);
      Insurt (Yout 13);
      root = delete (root, b),
       if ((seasch Groot, 5)) = = NULD
         print f (" Element not found in");
       else
        printf (" Element found in");
       print ("Inorder traversal is In");
         morder (root)
         Printt ("in Preorder troversal is in")
         becarge ( not)
```

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Exp. No.	
printf C" in postantia traversal is init;	
postox den(root);	
2	
setruct node a insert (struct node a root, int x)	
£	
if (root = = nucle)	
+ temp = (struct rude *) malloc (si reat (struct nodo))	
temps data=2;	
temp > left Child = temp > right child = nucly	
reot = temp;	
3	
else if (x>rout > obuba)	
root > right chid = insert (root > right child) a);	
92/3	
Yout > left chid = invert(root > left child, 2);	
return roof, MARIANA	
3	
Struct node * search (struct node * root, inta)	
it (root == NULL 1/root > data == x)	
return root;	
else if (x > root + dala)	
return search (root > right child, x);	
else	
return search (roof > let t child ix);	
void incorder (struct ned e * root)	
If Grout (=NULL)	
I novel a (root a left child);	

(AUTONOMOUS) Shamshabad - 501 218, Hyderabad. Date age No. 25 Exp. No. printf ("/od", rout - dala); 3 morder (roof signt hild) void preox les (struct node #rout) if (roof 1 = noull) f print (% d", root >dala) preorder (rat + sight child) voi d postosder (struct rade + x001) y it (Losti-worr) postordor (rout + left child),
postordor (rout + right child), Mint (" 0/. d", sout ->dola) Struct node * delete (struct node * rout, intx) d it (200+ == WOLL) retugn ruot;

it (root == nous)

return root;

it (x > root > data)

root > right chid = delete (root > night child; x);

else

if (x < root > data)

root > left child = delete (root > left child; x);

else

root > left child = delete (root > left child; x);

else

rif (root + left child == nous x root + right child; x);

```
frec (rest);
       return nucl,
   elec + (rout > left child == NULL /1 root > right child == NULL)
        Struct node & temp;
       it ( rout slettehild == NULD)
           temp = real + right child;
           temp = root + left child;
        free (sout);
       return temp;
  else
     Struct nude + temp = find min Grout > right chi lo);
      Youtsda = temp >delas
       routsright child's delete Gout sright child, temp adolas
  return rout;
struct note & find imm (struct node & root)
    I if ( root == NOLL)
                return NULL;
       else if (root + left child ! = NULL)
            return And min Crout a left child);
       return root;
```

Date

Exp. No.

heapily (array, oie, 1) Void heapsont (int array (), int si Le) for(i= \$1 ce/2 -1; i>=0; i--) heaps fy (daray , size, i) tos (i= size-1; i>=0, i-) 1 temp = amay [0]; array (o) array (i) arridy(i) = trap heapty (oray, i, o); void heapify (int array (7, int size, inti) h int temp; int laget = i, int 1=201+1 IN Y= 2x i +2; it (1< give > 2 array [1] > array [larget]) Congest = 1; if (x dsize strangy (x) rownay (largust)) long 18+ = x; if (largest 1=1) (femp = overag (1) corray[i) : array [agest); array Mangest + = 1cm+ heapify (assey, size, largert);

Element found

Inorder troversal is:

135

Preoxder troversal is:

153

Postorder troversal is:

351



Page No. 28	Date
	Exp. No.
8. write a c program to implement Breadth Aist Sease # include <stdook> # define initial I # define waiting 2 # define waiting 2 # define max 5 Int queue [MAX); IN front = 1, rear = 1, n; IN G [MAX] [MAX], state [10]; Void insert queue (1x), Int delete queue (1x), void bf - troversal (1); Void create quaph(1); Void create graph(1); Void main(1) (Create graph(1); bf - troversal (1); J</stdook>	ach (BES)
Void exerte-graph() Intorigin, destin, c, max. edge. printf festa number of vortice:") scart ("//d", an): mon-edge nath i) for (c=1; c=mon-edge; c+p) Printf festar edge dod(-1-1 to quit):", c); Scart ("//d d/.d", acong in, adestin): If (org in == + xadestin == 1) break;	

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Page No. 29 Date Exp. No. else if (origins = n 11 destins = n 11 origin < 011 destine 0) I printf ("Invalid edgern") 6 Forgin] [destra] = 1 3 void bf-tones sale) for (v=0, ven, v++) State Cuj = initial; print (center short verter la BESIND) Scot (00/00", & V) bfs(v); void bfs (int v) insort quene (v); Storte (v] = worling, while (rear +) (v= delete-queuel) PANT (wolod", W); State Cu3 = vir feel; for (1:0; 1en; 1+P) 1 1+ (6EV7CI) == 1 >> State (1) == initial) of inscripting (i); state (i) = worting;

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rage ite. 30		Exp. No.
3 3		
3		
3 void in	west-queue (int a)	
	ont = = +1)	
	1 + + ;	
	ue [terear] = x;	
5		
in dele	te -queu()	
retu	our (queue (front +0);	
3	SCOTTEGE OF SAME	
output		
Enter Th	ge 1(-1-1 to quit):0	
enta ed	ge 1(-1-1 to quit) =0	
1	() 1 0 1H) : 0 TO 1980	
Enter edg	e 2 (-1 -1 to quit): 0	
7	1 g e 3 (-1 -1 to quit) = 1	
1122	· W/	
renta 4	edge 4(-1-1 to quit):2	
1		
Enta e	dge 5 (-1 -1 to quit) -1	
	steat verten for BFS	
ENTEL	2 1007 0001011	
0 1	234	

Page No. 31	Date
	Exp. No.
q. write a c program to implement Depth first Sec #include < stdio.h. #define MA × 10 int n; int visited [MAY]; Int adj [MAY][MAY]; Void create-graph(); Void afs (int); Void main() fint v; Create-graph(); Printf ("Enter the starting vertexin"); Scorf ("% d", &v); dfs(v);	anch (OFS)
Void create graphi)	
printf("enter number of vertices;")	
Scanf (ag/d", 20).	
mane-edge = n* (n+);	
for(c=1; coman-edge; c++)	
Print ("Enter edge o/od (-1-1 to quit):", c); Scarf ("% d % d" > rongin, ~ destin);	
(orgin = 4 = destin==)	_
else it (origin) = n destin) = n origin co desti	n co)

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printf ("invalid edge (In"); adjorigin] [destin] = 1; void ofs (int i) (inti) Printf (" / d", i); visited [1]=1) for (i=0, i < n; i++) if (1 writed () 1 & ady (;]()] == 1)

output Enter number of vertices: 5 Enter edge 1 (-1 -1 to quit):01 Enter ed ge 2 (-1-1 to quit):02 Inter edge 3 (-, -1 to quit):13 Entor edge 6 (-1 + toque): 24 Enter edge 6 (-1 -1 to quit): 3 4 Enter edge 6 (-1 -1 to quit): -1 -1 Enfor the stording vortex: O DF & trovasal Steading from verten 0: 0 13 42

Date Page No. 33 Exp. No. 10. write a corogram to implement AVI Tree, operation Inscriton, Deletion and Scarching. #include cstdio.h> finelude estalibha Struct nude int data; Struct nude & left; Struct nod * x19 hd; struct-node * newnode (int), Int neight (structuale +); int get Balance (struct node +); Struct node * right Rotate (struct node *) Struct no le « l'eff Rotate (Struct node »); Struct node + insort (struct node , in); Void incorder (struct nude a); Void main() Struct node + noot=NULL; ind n, i, x; Print the no of node ini). last (10% d", 200); for (1=0; icn; i++) Sear (10/0 d"/2 N); rect = insort (rout, a); Prints ("Inorda troversal of the contracted AUL tree") inordon (root)

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Page No. 34 Date Exp. No. Struct node of new ande (in key) Struct node * node = (struct rode =) malloc (sneof (struct node); node > dola = key; node > leff = NULL, rode aright- NULL return node; Int height (struct node a node) If (no de == NULL) int left Height = height (node + left); Int right Height = height (node + right); xekun (iet Haight > right Height) i (ieft Height i) : (right Height ti). int getBalance (struct node = node) (if (node == nuli) returno; reter height (node + left) - height (node + right). Struct node * right Rotate (struct nod & y) Struct node = x=y >left, struct note a Ta = x > left, 7 > right =y; y sleff sta return x;

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Exp. No.

```
Struct node - left Rotate (struct node o'x)
 struct node + y = x -> xight;
struct node * Tz = y> left;
   y->left=2,
  スタright=Tz;
  retean y;
struct nude * incert (struct no de a node, int key)
( if ( node == NULL)
      return newnode (kew);
 if (keyenode > data)
       nade + left = insert (node + left, key)
  tise if (key > node > data)
          node right = insert (node + right, key),
   else
     return node;
 int balance = getBalonce (node);
If (balance > 1 & & key < rode > left > data)
     return rightRotati(nede);
1 F (bolance < -1 & & key > node + right > dola)
     return leftRotati(node):
 If (balance > 1 & > key > node > left > dada)
      1 note > left: left Robots (node > left)
        retain rightRotate (node)
```

Page No. 36	Date Exp. No.
if (balonce 2 1 >> key < node > right > dall A node > right = right rotate (node > right); return let rotat (node); Yetwon node; You'd incider (ctruet node errout)	Exp. No.
finorder (root = null) printer (root = nett); printer (root = right); inorder (root = right); That the no of nodes I	
Enter the value for each node 30 20 40 10 25 35 45 Inoxder troversal of the constructed AVL 10 20 25 30 35 40 \$5	tree: