Program -1

Airo! - To mage two sosted assays.

Algorathm: -

Step 1: Start

Step 2: Declare the variables.

Step 2 : Read the Size of first array.

Step 4: Read clements of first array is sorted order.

step 5 : Read the SIBE up second array.

step 6: Read the elements of second array in sorteel

Order.

Step 7: Repeat Step 8 and 9 while ix m & jxn

slep 8: check if a [i] >= b[i] then c[x+i]=b[i++]

Slep 9: else C[k+t]=a[j+t]

Step 10: Repeat step 11 while ixm

Slep 11: C[k++] = a[j++]

Slep 12: Repeat Slep 13 while Jan

Step 18 : C[k++] = b [j++]

step 14: point the first array

step 15: Print the second array

Step 16 : print the merged array

86p 17: 36p.

output

```
Size y hist array
  Enter value in sosted oxcles
  5
  813e of second array
  Q
 Enter value in susteel order
 9
10
Array A:
ARRay B;
9
10
merged array
9
10
17
```

Aim: 10 persons stack operations.

Algorithm:

Step 1: Start

Slep 2: Declare the node and the required variables

84p 3: Declare the functions for push, Pop, elisplay and search an element

slep 4: Read the choice hom the user.

Then Read the element to be pushed and call the Renchion to push the element by passing the value to the function.

Step 5.1! declare the new node and allocate memory for the new node.

8lep 5.2: Set new node -> clata = value.

step 5.3! check by top = = null then set newhode >

step 5.4: Set new node - nent = top

slep 5.5! Set top = new node and then point insertion is successfull.

Step 6: 14 wer choose to pop an element hom the stack then call the function to pop The element.

- Slep 6.1: Chelle if top = = Null then point stalk is empty.
- Step 6.2: else declare a pointes variable temp and intillize it to top. god a
- Step 6:3: Point The element that being deleted.
- step 6.4: set temp = temp = nend.
- Step 6.5: Pree the temp
- d of towns set what step 7: 18 the user choose the duplay then call the function to display the climent is the stack
- Step 7.1: check if top = Null then proport Stack is empty. andous &
- Step 7. 2: else declare a pointer variable temp and inhilize it to top.
- Step 7. 3! Repeat Steps below while temp- nend!= of: billet towned null.
- 840 7.4: pant temp-date.
- Step 7.5: step temp = temp nend.
 - step 8: 18 the user choose to seach an element hom the stack then call the Runchon to search an element.
- step 8.1: Peclare a pointer variable ptr and other newsary variable.

Slep 8.2: Inchiase pla = top.

Step 8.3: check up ptr=null then print stack empty.

Step 8.4: else Read the element to be searched.

Step 8.5 : Repeat step 8.6 to 8.8 while phr!=null.

Step 8.6: cheele It ptr -> data == Item then point element fountied and to be localed

and set flog = 1.

Slep 8.8 = check by flag = o then print the element

step q = stop.

Menu

1. push

3. display

4. search seasonal all ambies

5 · Grait

Enter the choice : I don't ent board ! it got onto the eliment to be inserted: 2 Insertion is successfull

call the hereston to push the clarant

the volue to the hundress

There = get ju shade to a gull

or case

5 quis

cyali

13 400

Menu

Las Push above our unt acotoch :

a. Pop

3. display

5 Exit

Enter the choice: 1 Burt - Louis Enter the element to be inserted: 4 insertion is sucessful.

House thought of seconds read to

god of exercise tell the ments should all

push sing a matrix selo

a. pop and of it settles pres

8- display

4. search

5. Guil harry gade quel 400

Enter the choice: 1
Enter the element to be insciled: 10
inscition is successfull.

and or it west that

state top of trade to

the dead a short will

3 7 10

menu

1. pash and the second of the

a pop

2. display

4 Secuch

5 · Exil

Enter the choice: 2 Element deltect: 10

menu

1 push

a pop

3 display

4 secuels

5. Gall and I would

Enter the choice: 3

Program: 3

Amo: To perform circular queue operations.

Algorallom:

Slep1: Stast

Step 2: Declare the quer and the other variables.

Step 3: Declare the functions for enqueue, dequeue search and display.

Step 4: Read the choice boro the user.

Step 5: 14 the user choose the choice enqueue then Read the element to be inserted. From the user and call the enqueue Rendion by passing the value.

Sup 5.1: Check up host ==-1 and zear==-1

then set hont =0, zear=0 and set

quive [zear] = element.

Slep 5.2: else ly Real +1 % max == Bont or front = real +1 then print queue is overflow.

Step 5.2: else set reas sreas +11. mon and set queue [reas] = element

step 6: Up the uses choice is the option deque then earl the function dequeue.

- Step 6:1: challe if Bont = = -1 and zear = = -1

 Then point queue is underflow.
- Slep 6. a: else check up hont == zeas then point the element is to be deliled then set front = -1 and zear =-1.
- Step 6.3: else print The element to be dequeued. Set Bont = Bont + 1% mark.
- Slep 7: 14 the user choice is to display the queue then call the function display.
- Step 7.1: check up Bost = -1 and rear = -1 then
 Print queue is empty.
- Step 7.2: Else repeat the Step 7.3 while 12 xeas.
- Step 7-3: Print queue [i] and set 1 = i % more
- Step 8: 14 the uses choose the search then call the function to search an element in the queue
- Step 8 1: Read the element to be searched in the
- Slyp 8.2: check 18 Hem = = queue[i] then point Hem bound and 1th position and insumunt by 1.
- Slep 8. 8: check up c = = 0 then possof item not found.
- Step 9: stop.

and all application to a proper dies to property was been death 1 depends Merul - band was ad at beauth with boas and In belle and a gold daget 3. display - who he - the 11 deads 0 % 405 tide of si thicker plant towns love Enter the number to insert 10 towned and best town to post got about a significant nenu 1. Inseet 2. Delet 3 display 4. Seach 5 Frit Enter the choice: 1 Enter the number to insert : 20 Mener. 1. Insert a. Delet 3. display 4. seurch 5. Exit Esta the choice: 1 Enla the number to insert: 30 Manu 1. Insert a. Delet

3. display 4. Secuch greet the perform metalog from godixers Enter the choice: 3 · conditioned 10, 20, 30 Monu trate & Dist 1. Inself 2. Deleh 3. display " set los may set espect : some 4. Seaseb of Four Fourters and several and west acoust a put Enter the choice: 4 Enter the element which is to be search : 30 Mener work of second will and 1- insert and of tennests wit books with 2. Delet 3. display 4. search of process for without 5. Exil Enter the choice 12 10 was deleted monu 1. Insert at 2. Delets - x or 10 16 7018 pl 9219 1 5 1 10 12 3. display I will be some land 4. Secreto 5. Exit Entre the choice; 5 court were more of the strong was not as the

may the torchire diquere

Program: 4

Airo: 90 perform doubly linked list operations.

Algorithm:

Slep1: Start

slep à : Déclare a struture and related variables.

Slep 3: Declare hinchons to create a nocle, insert a nocle in the beginning at the end and given position, display the list and search an eliment in the list.

Step 4: Define hisibion to create a node, declare the sequired variables.

Slep 4.1: Set memory allocated to the node = temp

then set temp -> Prev = neill and temp->
nent = neil.

Slip 4. 2: Read the value to be inscribed to the node.

Slip 4.3: Set temp > n = clata and increment count by 1.

Slep 5: Read the choice from the uses to perform definent operation on the list.

Slep 6: 14 the user choose to perform insertion operation at the beginning then call the function to perform the insertion.

Slep 6.1; check up head = = null then call the function to real a node, perfrom step 4 to

- Slep 6. a : sets head = temp and temp 1 = head.
 - slip 6.3: Else call the function to reat a node,

 perform slep 4 to 4.3 then set temp = nonl=

 head, set head = prev=temp and heads temp
 - dep 7: If the user choice is to perform insection at the end of the list, then call the function to perform the insection at the end.
 - Slep 7.1: Check it head = = null then all the bundon to exect a new node then set temp = head and then set head = temp1.
 - Slep 7.2: Else call the henchon to exeal a new node then set temps new = temp. Hamp Drav = temps and temps = temp.
 - Slep 8: If the uses choose to perform insertion in the list at any position then cell the function to perform the insertion operation.
 - Slep 8.1: Declare the necessary variables.
 - slep 8.2: Read the position cohen the nocle need to the inserted, set temps: head
 - Slips. 3: check up pos <1 or pos >= count +1 then position is out appearage.
 - Slep 8:4: Cheels it head = = neill and pos=1 then
 point "empty but cannot insert other
 then host position"

- Step 8.5 : cheels It head = a null and pos +1

 Then call the function to creat new hode the set temps head and heads temps.
- Slep 8.6 . while I kpos them set temp 2 = temps = nent then increment i by 1.
- slep 8.7: call the function to exect a new node and then set temps prev = temps.

 temps next = temps = next = prev = temps.

 temps = next = temps = next = prev = temps.
- Sep q: 14 the user choose to perform delibror operation is the last than all the function to perform the delibror operation.
- Step 9. 1: Declare the necessary variables.
- Slep 9. 2 : Read the position where had need to be delied set temp 2 = head.
- Step 9.3 : Check if head = = neil then point the list is empty.
- Step 9.4 check cef head = = need then point the
- slep 9.5 : while ix pos then temp a = temp a mont and increment i by 1.
- Step 9.6 : check 14 1 == 1 Then check uf temps ->

 next = enew then point node deluct

 free (temps) sof temps -> head a new.

temps - prev - nent = null then here Chemps) then point node delebel. : tempa - nent - prev = tempa - next then Step 9.8 check up i != 1 then temps - prev - nent =temp 2 - nent. · check up i == 1 then head = femps - nent Step 9-9 Then prost hode deleted then fire temps. and decrement count by1. : 14 the user chouse to perform the display Slep 16 operation then call the function to display The lest. Slep 10.1 : Set tempz=n : check if temps = need then point lest Slep 10-2 is empty : while temps - new = new then point Slep 10.30 temps > n then temps = temp a - nent : If the user choose to perform the secret Slep 10 operation then call the hunchon to perham Sevech operations. : Declare the necessary variables-86p 11.1 : Sel tempa > head 86p 11. 2 ". cheek y temps = = null the point the Slep 11. 3 list is empty sup 11.4 Kead the value to be searched.

: Chall ly temp 2 > nent == new Then

Slyp 9.7

Slep 11.5": while temps 1 = null then check by

temps - n = = dala then point elimint

found at position count +1.

Slep 11.6: Else Set temps = temps = nent and

increment count by 1.

Slep 11.7: point element not fount in the list.

Slys 12 : End.

autput

1. Inself at begining

2. Insert at end

3. Insert at position

4. Delet

5. Display

6 search

7. Enit

Enter the value to nodo: 5

1. Moself and beginning

2. insert at end

3 insert at position

4. Delete

5. Display

6. search

7. Exil

Ente choice! 1

Enter The value to nocle! 10

1. 10 Seif at begining

a. Insert at end

3. Insert of position

4. Delete

5. Display

6. Seuch

\$. Enit

Enter choice: ?

Enter Value to noch : 2.

1. insert at beginning 2. Insert at end 8. Insuk at position 4. Delet 5. display 6 · Search Fixe - r Enta thola: 3 Ents the position to be inserted: 2 Enter the value to hode: 13. I insert at begining 2. Insert at end 3. Insert at position 4 - Deleti 5 · desplay 6 - Search 1. Guil Entr chou: 4 Ente the position to be deliber a hode deletiel I mself at beginning a. Inself at end 3. Inself at position 4. Delite 5 desplay 6. Search 7 Enlf

Enter value to search 100 Element bound in 1 position

I tosul at begining

a. Insul at end

d. Insert at position

4. Delit

5 Diplay

6. Seatch

7 - Enut

Enter the choice 17

Program :5

Aim: To perform set operations.

Algorithm:

Slep1 : Start

Step a : Declare the necessary variable.

Slep 3: Read the choice born the user to perform set

operation.

Step 4: 46 the uses choose to perform union

Sleps 1: Read the cas dirally up a sels.

Slep 4 a : check It m, -n Then Print cannot perform

Union.

Step 4. 8: Check else read the elements in both the sels.

Step 4.4 : Repeat the Step 4.5 to 4.7 unhl 1'xm.

Slep 4-5: C[i] = A [i] 13 [i]

34p 4.6 : point ([]

Slep 4.7 : Increment i by

Sup 5 : Read the choice born the user to peshorn

Intersection.

Sup 5.1: Read the condenality up & sels.

Slep 5.2: Check up m, = n then point cannot perform

Inder section.

Sty 5.3 : else read the element is both the sets.

slep 594 : Repeat the slep 5.5 to 5.7 unhl irm.

```
(07 - AD) 4- BD]
Slep 5 5
            built c (1)
Slep 5 6
             interment i by 1-
Slip 5.7
             ly the user choose to perform set diffrance
Sleps 6
             Operation
            Read the cardinality of a set.
Slep 6-1
             check up men then print cannot
Slep 6-2
             Performo set dyfrenu operation.
             the read the element in both sets.
Slep 6 3
             Repeat the slep 6.5 to 6.8 cinhlich.
Slep 6 4
          : Cheele ly A (i) == 0 then C [i] =0
Sly 6.5
             Elle UB B [i]==1 the c[i]=0.
Step 6 6
             the Clist.
Sup 6 7
             Internent 1 by1.
Slep 6-8
            Repeat Slip 7-1 and 7-2 unhl 12 m.
Slep 7
```

· point cw

: Incument 1 by1.

9 up 7-1

Slep 7.2

```
Owput
 Press I for Lenion
 Press & for intersection
 Pren 3 for substraction
 Paul 4 Por enil
 Enter choice 1
 Enter the size of set 1
  3
 Enter The element of set )
 Enber the Size of Set 2
 Enter the element of set 2
 2
 3
Union: 1 2 3
Press 1 kg cinion
Pren a for Intersection
PRESS 3 for Substration
pren 4 for Exil
Enter Choice 2
```

Enter choice 2
Enter size of set 1
3
Enter the element of set 1
1
2

```
Entir the size of sed ?
  Enter the element of Set 2
  3
  Intersection: 3
  Presi 1 hor union
  Press 2 for increseivon
  prem 3 for substachon
  pren 4 hor end
 Enter your Choice
 Enter the 813e of Sel1
 onles the element of sels
 Enter the SIZE of Set 2
Enter the element cy Set 2
 3
 2
defluente:1
Press 1 for union
press a for inforseshop
press 3 for substrathon
been 4 for Enit
Enter choke: 4
```

Program: 6

Am ! To perform Binary search tree operations

Algorithm:

Slep 1: Start

Slepa: Declar a structure and structures pointers for Insertion, delibion and search operations and also declare a function for inorder traversal.

Sleps: Declare a pointer as 800t and also the

Sly4: Read the choice how the uses to perform insertion, deleton, searching and inorder traversal.

Sleps: 18 the uses choose to perform in sertion operation then send the value which is to be inserted to the tree from the uses.

Slep 5.1 : pass the value to the insert pointer and also the root pointer.

Slep 5.2: cheele up 1 200+ then allocat memory for the 200+

Sup 5:3 : Set the value to the info past of the 200t and then set lyt and right part by the 200t to rull and return 200t.

Slep 5.4 : cheele of 300+ -> info > x then call the Insert pointer to insert to left of the 300+.

Step 5.5 : cheele up 8001 -> Indo > x then eall the

the root

Styp 5 6 : Return the root.

Sup 6 : 14 the uses choose to perform delihor operation then seed the element to be delibed from the tree the rood pointers and the Hero to the delit pointer

Slep 6-1 : cheele of not ple then print node

Sup 60 : check by not pla thempond on else up play sinfo < x the call delet pointer by pussing the right pointer and the Hem.

Slep 6 3 : Else 1/2 Pls -> info > x then all delete pointer by passing the lyte pointer and the Hern.

Step 6.5 : Else of pla-style == nell then set P1.
Pla = Right and free Pla, Rithun P1.

Dlyse.6: Else 18 pla - right - null the set P.

slep 6 + : Else sel Pi = thr = night and
Pa = ph = night.

Sup 6.8 : while 11-14t not equal to rull,

Set 11 4t plx - 4t and less ptr.

Zeturn P2.

Step 6-9 : Return Phr.

Sup 7: 17 the uses choose to perform search operation the call the pointer to perform search operation.

Sup 7.1 : Declare the necessary pointers and

Step 7 - 2 : Read the element to be searched

Slep 7. 8: while pla cheele of Hem > ptr - 10 ho

Slep 7.4 : Else of Hero x phr sinfo then
phr = phr = ly6.

Sup 7.5 : Else break-

Step 7-6: check up Dfr then Dront that the element is found.

sty 77 : Else Print element hat found in true

Step 8: 14 the uses choose to perform traversal then cull the traversal funtion and pass the rook pointers.

Sup 81 : of sood not equall to reall excurringly and so denthons by easing sood - lyl.

Sup 8-2 : point sool - info

Sup 8-3 : cos the trouvel Runchen enemberly by passing sool - sight.

Sup 9 : cod

1 moseit in Binary tree

2. Delete From binary there

is in other troussel of Binary these

4. Search

5 001

Enter Chota, 11

Enla naso elament 120

shoot in the second of history tree is the

1. Insent in Binary ters

J. Delel. Born Browing the

3. morder draversal of Binoughter

4 - Search

S. Exil

Entir choice !!

Enter new element: 25 morder traversal of binary true is : 20 25

1- Insert in Bonary the

2. Delet From Binary tree

3. Invider Pravortal up Binary tres

4 - Search

s ent

Search o poration in binary tree Enter the element to be beauched: 25

Element as which was searched in bound.

smooth in Broady tree

a. Deleb bom Binary tree

3. Inolder travelled of Binary tree

4. Seauch

s. exil

entir chara 15

and up the program

Programo 7

Am: To perform Degent set operations.

Algorithm

step 1 : Start

step & Declare the Struthere and related variable.

step 8: Doctore function makeset ()

Sty 31 : Repeat 3ap 3 2 to 34 unit irn.

sop 3 = ! desparant [] is set to 1.

Sty 8 8 : Set dis Kank [1] is equal to 0.

Sty 3-4 : increment by 1.

504 4 : Declare a function display set.

Sup 4-1: Repeat sup 4 2 to 4.3 until in

Sty 4 2 : Print disposens [1]

344-3: Inmimint 1 by 1.

16444 : Repeat Step 45 and 46 unh) 1xn

Sty 45 PAINT CHAOOK[]

Sty 4.6 : Memor 1 by1.

Step 5 : Declare a function And and pass & to the Function.

Sty 5-1 : check It duparns [n] = x then set the zehon value to clis pourent [x]

step 5 - 2: return disparent [27]

Step6: Declare a function union and pass to variables or and y. Step 6-1: 3eb or set to Find (or). Step 6 2 : Sel y set to find (y). Slep 63 : cheete of y set = = x set then return Step 6.4: check of classank [x set] x dis rank [y set] then Slyp 6.5 : Seb 4 set = disparent [4 sel] Slep 66 : Set -1 to dispant [x set] Sto G.7: Else by cheek dissant [x set] > elspins ([4set] Step 6. 8 : Set x Set to classank [4 set] dup 6-9 : Set -1 to dustants [4 set] Sty 6 10: Else disposent [yset] = x seb. Sty 6-11: Set disposint [x sel]+1 to dissant [x set] Step 6-12: 3et 1 to durant [9 set] 3tip 7: Read the number of element. call the function makesel. : Read the choice from uses to peoform union find and display operation. Sep 10 : of the user choose to peoles union

Sep 10: "If The user choose to people uneon operation read the element to people on uneon and then all the function to perform uneon operation.

Step 11 : to the uses choose to perform Find
operation send the element to cheek
up connected

Step 11 : Cheek by find (x) = = Find(y) then
point connected component.

Step 11 = the point not connected component.

Stop ! by the uses choose to perform duplay.

Operation than one the duplay set hanckon.

Stay 18 1 End.

How mony element . 4

Internal

1- aniso

2. Find

8. Duploy

Onlin choia 11

Enla tiements h peoloro union:

3

4

to you wish to anknow (10)

1

N'ILIYUL

Lanun

w And

3. Display

Enter Chon : 1

Enth elimint & Perhain union:

5

6

Do you wish to continue 1210)

b union

a roud

b union

a roud

b union

codo chom is

parent amoy

a i a 3

bout aroug

-1 o b 1

Do you wish h continue i ((10))