**SSN COLLEGE OF ENGINEERING**

**DEPARTMENT OF CSE**

**ASSIGNMENT 10**

**MAX HEAPS**

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**CSE -B**

**CODE:**

#include<stdio.h>

#include<string.h>

#include<stdlib.h>

#define max 50

#define maxsal 1000000000

typedef struct employee{

char name[50];

int id;

float salary; *//structure for employee*

}emp;

typedef struct priorityq{

int capacity,size;

emp e[20];

}pqueue;

int isfull(pqueue\* q){

if(q->size==q->capacity)return 1;

else return 0;

}

int isempty(pqueue\* q){

if(q->size==0)return 1;

else return 0; *//checking for empty condition*

}

pqueue\* create(){

pqueue \* q=malloc(sizeof(pqueue)); *//initialise the heap*

if(q==NULL){

printf("fatal error");

}

else{

if(q==NULL)printf("fatal error");

else{

q->size=0;

q->capacity=max;q->e[0].salary=maxsal;

}

}

return q;

}

void insert(pqueue\* q){ *//insert elements into heap*

emp e1;int i;float sal;

if(isfull(q))printf("queue full");

else{

printf("enter emp name: ");scanf("%s",e1.name);

printf("enter emp id: ");scanf("%d",&e1.id);

printf("enter emp salary: ");scanf("%f",&e1.salary);

sal=e1.salary;

for(i=++q->size;q->e[i/2].salary<sal;i=i/2){

q->e[i]=q->e[i/2];

}

q->e[i]=e1;

}

}

void delete(pqueue \*q){ *//deleting root node from heap*

int i,child;

emp maxele;

if(isempty(q))printf("queue empty");

else{

emp min=q->e[1];

maxele=q->e[q->size--];

for(i=1;(i\*2)<q->size;i=child){

child=2\*i;

if(child!=q->size && q->e[child+1].salary>q->e[child].salary)

child++;

if(maxele.salary<q->e[child].salary){

q->e[i]=q->e[child];}

else break;

}q->e[i]=maxele;

}

}

void print(pqueue\* q){ *//printing the heap*

int i=1;

while(i<=q->size){

printf("\n%s %d Rs.%f\n ",q->e[i].name,q->e[i].id,q->e[i].salary);

i++;

}

}

int main(){

pqueue\* q;

q=create();

char choice[20];

while(strcmp(choice,"stop")){

insert(q);

print(q);

printf("\nenter stop to end\n");scanf("%s",choice);

}

printf("max heap before deletion\n"); *//calling delete method*

print(q);

delete(q);

printf("max heap after deletion"); *//displaying final result*

print(q);

return 0;

}

**OUTPUT:**

enter emp name: hari

enter emp id: 3

enter emp salary: 12000

hari 3 Rs.12000.000000

enter stop to end

y

enter emp name: ram

enter emp id: 6

enter emp salary: 20000

ram 6 Rs.20000.000000

hari 3 Rs.12000.000000

enter stop to end

y

enter emp name: usha

enter emp id: 34

enter emp salary: 59000

usha 34 Rs.59000.000000

hari 3 Rs.12000.000000

ram 6 Rs.20000.000000

enter stop to end

y

enter emp name: jeeva

enter emp id: 45

enter emp salary: 16000

usha 34 Rs.59000.000000

jeeva 45 Rs.16000.000000

ram 6 Rs.20000.000000

hari 3 Rs.12000.000000

enter stop to end

y

enter emp name: lallu

enter emp id: 89

enter emp salary: 13000

usha 34 Rs.59000.000000

jeeva 45 Rs.16000.000000

ram 6 Rs.20000.000000

hari 3 Rs.12000.000000

lallu 89 Rs.13000.000000

enter stop to end

y

enter emp name: vibinesh

enter emp id: 43

enter emp salary: 100000

vibinesh 43 Rs.100000.000000

jeeva 45 Rs.16000.000000

usha 34 Rs.59000.000000

hari 3 Rs.12000.000000

lallu 89 Rs.13000.000000

ram 6 Rs.20000.000000

enter stop to end

stop

max heap before deletion

vibinesh 43 Rs.100000.000000

jeeva 45 Rs.16000.000000

usha 34 Rs.59000.000000

hari 3 Rs.12000.000000

lallu 89 Rs.13000.000000

ram 6 Rs.20000.000000

max heap after deletion

usha 34 Rs.59000.000000

jeeva 45 Rs.16000.000000

ram 6 Rs.20000.000000

hari 3 Rs.12000.000000

lallu 89 Rs.13000.000000