DESIGN QUESTION 1
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//declaration of struct outside main
struct slip{
char letter
int no
}

//inside of main
Declaration of array char location[100000]
Read character ch
Menu driven function with ch equal to r means insert inside a queue, s to dequeue and t to exit the console.

//to insert into queue
insert_queue(A,struct slip* key)
if(queue full) print “OVERFLOW”;
 A[i]=key;
 I++;
Heap_insert function is called

//function
heap_insert(A, struct slip* key)
 A.heapsize=A.heapsize+1;
A[A.heapsize]=-infinity;
HEAP_INCREASE_KEY(A,A.heapsize,key);

//heap_increase_key
HEAP_INCREASE_KEY(A,i,struct slip* key){
if(key->no!=0){
A[i]=key;
While i>1 and A[Parent(i)>A[i]
  Exchange A[i] with A[Parent(i)]
  i=Parent(i)
}
}

//to dequeue
void dequeue (char* location, struct array* A[10000])
Int spare=A.heapsize;
Int track=0;
  Build min heap function;
```

```
For i=A.heapsize, i>=1, i++
location[track++]=A[i].letter;

//build min heap;
Int left= left child index of A[i];
int right=right child index of A[i];
if left<=A.heapsize and A[left]<A[i]
 small=A[left];
if right<=A.heapsize and A[right]<A[left]
 small=A[right];

if(small!=i)
Exchange A[i] wihtits child
Build min heap(A,small,heapsize);

//when t is pressed:
return 1;
```