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Stacks & queues representation using linked

```
#include<stdio.h>
#include<stdlib.h>
#include<math.h>
#include<process.h>

struct node {

struct node *link;
int info; };

typedef struct node *NODE;

NODE freenode(NODE x) {

free(x); }

NODE getnode() {

NODE x=(NODE) malloc(sizeof(struct node));

if(x==NULL){

printf("Memory is full\n");

exit(0); }

return x; }
```

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```
NODE insertfront(NODE first, int item) {
NODE temp = getnode();
temp->info = item;
temp->link = NULL;
if (first == NULL) {
return temp; }
temp->link = first;
first = temp;
return first; }
```

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NODE insertrear(NODE first, int item) {

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contd →

```
NODE cur, temp;
temp = getnode();
temp->info = item;
temp->link = NULL;
if (first == NULL)
{return temp;}
cur = first;
while (cur->link != NULL)
{ cur = cur->link;
  cur->link = temp;
  return first; }
}
NODE deletefront (NODE first) {
if (first == NULL) {
printf ("Stack is empty\n");
return first; }
```

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```
NODE temp = first ;
first = first -> link ;
printf ("item deleted = %d \n" temp->info) ;
freenode (temp) ;
return first ; }

NODE deleterear (NODE first)
NODE prev, cur ;
if (first == NULL) {
printf ("Queue is empty \n") ;
  return first ; }
if ( first->link == NULL)
{ printf ( "item deleted at rear end is %d \n" ;
        first ->info") ;
free (first) ;
  return NULL ; }
```

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```
void display (NODE first)
{ NODE temp ;
for(temp = first ; temp != NULL ; temp = temp->link)
{ printf ("%d\n", temp->info) ; }
}
int main() {
item item, choice ;
NODE first = NULL, first2 = NULL ;
for(;;) {
printf (" 1. PUSH - Stack \n 2. POP - STACK \n 3. PUSH -
QUEQUE \n 5. POP - QUEQUE \n 6. DISPLAY
STACK \n 6. DISPLAY - QUEQUE \n 7. EXIT") ;
printf ("\n Enter a choice : ") ;
scanf ("%d", &ch) ;
switch( choice) {
```

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```
case 1 : printf ("Enter item : \t \n");
         scanf ("%d", item);
         first = insertfront (first, item); break;
case 2 : first = deletefront (first); break;
case 3 : if (first == NULL)
             printf ("Stack underflow");
         else display (first); break;
case 4 : printf ("Enter item : \t");
         scanf ("%d", item);
         first2 = insertrear (first, item); break;
case 5 : first2 = deleterear (first2); break;
case 6 : if (first2 == NULL)
             printf ("Queue empty");
         else display (first2); break;
default : exit (1);
          break; } } }
```

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