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EX 7 IMPLEMENTATION OF QUEUE USING ARRAY AND LINKED LIST

Queue using stack

#include <stdio.h>

#define MAX 5

int Queue[MAX], front = -1, rear = -1;

int IsFull();

int IsEmpty();

void Enqueue(int ele);

void Dequeue();

void Display();

int main()

{

int ch, e;

do

{

printf("1.ENQUEUE 2.DEQUEUE 3.DISPLAY 4.EXIT");

printf("\nEnter your choice : ");

scanf("%d", &ch);

switch(ch)

{

case 1:

printf("Enter the element : ");

scanf("%d", &e);

Enqueue(e);

break;

case 2:

Dequeue();

break;

case 3:

Display();

break;

}

} while(ch <= 3);

return 0;

}

int IsFull()

{

if(rear == MAX - 1)

return 1;

else

return 0;

}

int IsEmpty()

{

if(front == -1)

return 1;

else

return 0;

}

void Enqueue(int ele)

{

if(IsFull())

printf("Queue is Overflow...!\n");

else

{

rear = rear + 1;

Queue[rear] = ele;

if(front == -1)

front = 0;

}

}

void Dequeue()

{

if(IsEmpty())

printf("Queue is Underflow...!\n");

else

{

printf("%d\n", Queue[front]);

if(front == rear)

front = rear = -1;

else

front = front + 1;

}

}

void Display()

{

int i;

if(IsEmpty())

printf("Queue is Underflow...!\n");

else

{

for(i = front; i <= rear; i++)

printf("%d\t", Queue[i]);

printf("\n");

}

}

Queue using linked list

#include <stdio.h>

#include <stdlib.h>

struct node

{

int Element;

struct node \*Next;

}\*Front = NULL, \*Rear = NULL;

typedef struct node Queue;

int IsEmpty(Queue \*List);

void Enqueue(int e);

void Dequeue();

void Display();

int main()

{

int ch, e;

do

{

printf("1.ENQUEUE 2.DEQUEUE 3.DISPLAY 4.EXIT");

printf("\nEnter your choice : ");

scanf("%d", &ch);

switch(ch)

{

case 1:

printf("Enter the element : ");

scanf("%d", &e);

Enqueue(e);

break;

case 2:

Dequeue();

break;

case 3:

Display();

break;

}

} while(ch <= 3);

return 0;

}

int IsEmpty(Queue \*List)

{

if(List == NULL)

return 1;

else

return 0;

}

void Enqueue(int e)

{

Queue \*NewNode = malloc(sizeof(Queue));

NewNode->Element = e;

NewNode->Next = NULL;

if(Rear == NULL)

Front = Rear = NewNode;

else

{

Rear->Next = NewNode;

Rear = NewNode;

}

}

void Dequeue()

{

if(IsEmpty(Front))

printf("Queue is Underflow...!\n");

else

{

Queue \*TempNode;

TempNode = Front;

if(Front == Rear)

Front = Rear = NULL;

else

Front = Front->Next;

printf("%d\n", TempNode->Element);

free(TempNode);

}

}

void Display()

{

if(IsEmpty(Front))

printf("Queue is Underflow...!\n");

else

{

Queue \*Position;

Position = Front;

while(Position != NULL)

{

printf("%d\t", Position->Element);

Position = Position->Next;

}

printf("\n");

}

}