

Rajalakshmi Engineering College

Name: shiloh .s
Email: 240701498@rajalakshmi.edu.in
Roll no: 240701498
Phone: 9488883273
Branch: REC
Department: I CSE FE
Batch: 2028
Degree: B.E - CSE

Scan to verify results



NeoColab_REC_CS23231_DATA STRUCTURES

REC_DS using C_Week 4_CY

Attempt : 1
Total Mark : 30
Marks Obtained : 30

Section 1 : Coding

1. Problem Statement

Fathima has been tasked with developing a program to manage a queue of customers waiting in line at a service center. Help her write a program simulating a queue data structure using a linked list.

Here is a description of the scenario and the required operations:

Enqueue: Add a customer to the end of the queue. Dequeue: Remove and discard a customer from the front of the queue. Display waiting customers: Display the front and rear customer IDs in the queue.

Write a program that enqueues all the customers into the queue, performs a dequeue operation, and prints the front and rear elements.

Input Format

The first input line consists of an integer N, representing the number of customers to be inserted into the queue.

The second line consists of N space-separated integers, representing the customer IDs.

Output Format

The output prints "Front: X, Rear: Y" where X is the front element and Y is the rear element, after performing the dequeue operation.

Refer to the sample output for the exact text and format.

Sample Test Case

Input: 5

112 104 107 116 109

Output: Front: 104, Rear: 109

Answer

```
#include<stdio.h>
#include<stdlib.h>
struct node
{
    int data;
    struct node*next;
};
struct node*front=NULL;
struct node*rear=NULL;
void eq(int a)
{
    struct node*nn=(struct node*)malloc(sizeof(struct node));
    nn->data=a;
    nn->next=NULL;
    if(front==NULL)
    {
        front=rear=nn;
    }
    else
    {
        rear->next=nn;
    }
}
```

```

        rear=nn;
    }
}
void dq()
{
    struct node*temp=front;
    front=front->next;
    free(temp);
}
int main()
{
    int a;
    scanf("%d",&a);
    for(int i=0;i<a;i++)
    {
        int b;
        scanf("%d",&b);
        eq(b);
    }
    dq();
    printf("Front: %d, Rear: %d",front->data,rear->data);
}

```

Status : Correct

Marks : 10/10

2. Problem Statement

Imagine you are developing a basic task management system for a small team of software developers. Each task is represented by an integer, where positive integers indicate valid tasks and negative integers indicate erroneous tasks that need to be removed from the queue before processing.

Write a program using the queue with a linked list that allows the team to add tasks to the queue, remove all erroneous tasks (negative integers), and then display the valid tasks that remain in the queue.

Input Format

The first line consists of an integer N, representing the number of tasks to be added to the queue.

The second line consists of N space-separated integers, representing the tasks. Tasks can be both positive (valid) and negative (erroneous).

Output Format

The output displays the following format:

For each task enqueued, print a message "Enqueued: " followed by the task value.

The last line displays the "Queue Elements after Dequeue: " followed by removing all erroneous (negative) tasks and printing the valid tasks remaining in the queue in the order they were enqueued.

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 5

12 -54 68 -79 53

Output: Enqueued: 12

Enqueued: -54

Enqueued: 68

Enqueued: -79

Enqueued: 53

Queue Elements after Dequeue: 12 68 53

Answer

```
#include<stdio.h>
#include<stdlib.h>
struct node
{
    int data;
    struct node*next;
};
struct node*front=NULL;
struct node*rear=NULL;
void eq(int a)
{
    struct node*nn=(struct node*)malloc(sizeof(struct node));
```

```

nn->data=a;
nn->next=NULL;
if(front==NULL)
{
    front=rear=nn;
}
else
{
    rear->next=nn;
    rear=nn;
}
}
void display()
{
    printf("Queue Elements after Dequeue: ");
    while(front!=NULL)
    {
        printf("%d ",front->data);
        front=front->next;
    }
}
int main()
{
    int a;
    scanf("%d",&a);
    for(int i=0;i<a;i++)
    {
        int b;
        scanf("%d",&b);
        printf("Enqueued: %d\n",b);
        if(b<0)
        {
            continue;
        }
        eq(b);
    }
    display();
    return 0;
}

```

Status : Correct

Marks : 10/10

3. Problem Statement

Pathirana is a medical lab specialist who is responsible for managing blood count data for a group of patients. The lab uses a queue-based system to track the blood cell count of each patient. The queue structure helps in processing the data in a first-in-first-out (FIFO) manner.

However, Pathirana needs to remove the blood cell count that is positive even numbers from the queue using array implementation of queue, as they are not relevant to the specific analysis he is performing. The remaining data will then be used for further medical evaluations and reporting.

Input Format

The first line consists of an integer n , representing the number of a patient's blood cell count.

The second line consists of n space-separated integers, representing a blood cell count value.

Output Format

The output displays space-separated integers, representing the remaining blood cell count after removing the positive even numbers.

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 5

1 2 3 4 5

Output: 1 3 5

Answer

```
#include<stdio.h>
#include<stdlib.h>
struct node
{
    int data;
```

```

    struct node*next;
};
struct node*front=NULL;
struct node*rear=NULL;
void eq(int a)
{
    struct node*nn=(struct node*)malloc(sizeof(struct node));
    nn->data=a;
    nn->next=NULL;
    if(front==NULL)
    {
        front=rear=nn;
    }
    else
    {
        rear->next=nn;
        rear=nn;
    }
}
void display()
{
    while(front!=NULL)
    {
        printf("%d ",front->data);
        front=front->next;
    }
}
int main()
{
    int a;
    scanf("%d",&a);
    for(int i=0;i<a;i++)
    {
        int b;
        scanf("%d",&b);
        if(!(b<0)&&b%2==0)
        {
            continue;
        }
        eq(b);
    }
    display();
}

```

```
} return 0;
```

Status : Correct

Marks : 10/10