Rajalakshmi Engineering College

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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

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 enqueue(int data){
   struct Node* newnode=(struct Node*)malloc(sizeof(struct Node));
   newnode->data=data;
   newnode->next=NULL;
   if(rear==NULL){
      front=newnode;
      rear=newnode;
   }else{
      rear->next=newnode;
      rear=newnode;
   }
}
```

```
void print_even(){
    struct Node* temp=front;
    while(temp!=NULL){
        if((temp->data)%2!=0 || temp->data<0){
            printf("%d ",temp->data);
        }
        temp=temp->next;
    }
}

int main(){
    int n,data;
    scanf("%d", &n);
    for(int i=0;i<n;i++){
        scanf("%d", &data);
        enqueue(data);
    }
    print_even();
}
```

Status : Correct **Marks : 10/10**

2. Problem Statement

Manoj is learning data structures and practising queues using linked lists. His professor gave him a problem to solve. Manoj started solving the

program but could not finish it. So, he is seeking your assistance in solving it.

The problem is as follows: Implement a queue with a function to find the Kth element from the end of the queue.

Help Manoj with the program.

Input Format

The first line of input consists of an integer N, representing the number of elements in the queue.

The second line consists of N space-separated integers, representing the queue elements.

The third line consists of an integer K.

Output Format

The output prints an integer representing the Kth element from the end of the queue.

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 5
2 4 6 7 5
3
Output: 6

Answer

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

struct Node{
    int data;
    struct Node* next;
};
```

```
struct Node* front=NULL;
struct Node* rear=NULL;

void enqueue(int data){
    struct Node* newnode=(struct Node*)malloc(sizeof(struct Node));
    newnode->data=data;
    newnode->next=NULL;
    if(rear==NULL){
        front=newnode;
        rear=newnode;
    }else{
        rear->next=newnode;
        rear=newnode;
    }
}

void find_Kth(int diff){
    struct Node* temp=front;
    for(int i=0;i<diff;i++){
        temp=temp->next;
    }
    printf("%d",temp->data);
}

int main(){
    int n,data,diff,pos;
    scanf("%d", &n);
    for(int i=0;i<n;i++){
        scanf("%d", &data);
        enqueue(data);
    }
    scanf("%d",&pos);
    diff=n-pos;
    find_Kth(diff);
}
```

Status : Correct **Marks : 10/10**

3. Problem Statement

Sara builds a linked list-based queue and wants to dequeue and display all

positive even numbers in the queue. The numbers are added at the end of the queue.

Help her by writing a program for the same.

Input Format

The first line of input consists of an integer N, representing the number of elements Sara wants to add to the queue.

The second line consists of N space-separated integers, each representing an element to be enqueued.

Output Format

The output prints space-separated the positive even integers from the queue, maintaining the order in which they were enqueued.

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 5
1 2 3 4 5

Output: 2 4

Answer

```
// You are using GCC
#include<stdio.h>
#include<stdlib.h>

struct Node{
    int data;
    struct Node* next;
};

struct Node* front=NULL;
struct Node* rear=NULL;

void enqueue(int data){
    struct Node* newnode=(struct Node*)malloc(sizeof(struct Node));
```

```
    if(newnode==NULL){
        printf("Memory allocation is failed\n");
        exit(1);
    }
    newnode->data=data;
    newnode->next=NULL;
    if(rear==NULL){
        front=newnode;
        rear=newnode;
    }else{
        rear->next=newnode;
        rear=newnode;
    }
}

void display_even(){
    struct Node* temp=front;
    while(temp!=NULL){
        if(((temp->data)%2==0) && temp->data>0){
            printf("%d ",temp->data);
        }
        temp=temp->next;
    }
}

int main(){
    int n,data;
    scanf("%d", &n);
    for(int i=0;i<n;i++){
        scanf("%d", &data);
        enqueue(data);
    }
    display_even();
}
```

Status : Correct ***Marks : 10/10***