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#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <time.h>
#include <unistd.h>
#include <ctype.h>

#define max 5

struct TASK
{
    int TaskId;
    char TaskTitle[100];
    int TaskDuration;
    char Status[100];
};

struct TASK task[10] = {
    {532, "ew34s", 3, "Idle"},
    {2352, "erw53r", 3, "Idle"},
    {325, "hg43gw", 3, "Idle"},
    {235, "fr33es", 3, "Idle"},
    {123, "f33fss", 3, "Idle"},
    {324532, "fad32g", 3, "Idle"},
    {12414, "ff43sd", 3, "Idle"},
    {242, "gd34fa", 3, "Idle"},
    {1444, "fa34fa", 3, "Idle"},
    {414, "ga41ag", 3, "Idle"}};

int taskcount = 10;

struct TASK queue[max];
int front = -1, rear = -1;

void enqueue(struct TASK task)
{
    if (rear == max - 1)
    {
        printf("\nQueue is full\n");
        // calculate wait time
        int waitTimeMin = queue[front].TaskDuration, waitTimeMax = 0;
        for (int i = front; i <= rear; i++)
        {
            waitTimeMax += queue[i].TaskDuration;
        }
        printf("Wait time is between %d and %d seconds\n", waitTimeMin,
waitTimeMax);
    }
    else if (front == -1 && rear == -1)
    {
        front = rear = 0;
    }
}

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        queue[rear].TaskDuration = task.TaskDuration;
        queue[rear].TaskId = task.TaskId;
        strcpy(queue[rear].TaskTitle, task.TaskTitle);
        strcpy(queue[rear].Status, "Queued");
    }
    else
    {
        rear++;
        queue[rear].TaskDuration = task.TaskDuration;
        queue[rear].TaskId = task.TaskId;
        strcpy(queue[rear].TaskTitle, task.TaskTitle);
        strcpy(queue[rear].Status, "Queued");
    }
}

void dequeue()
{
    if (front == -1 && rear == -1 || front == rear + 1)
    {
        printf("\nQueue is empty\n");
    }
    else
    {
        printf("Task %d is running\n", queue[front].TaskId);
        sleep(queue[front].TaskDuration);
        printf("Task %d is completed\n", queue[front].TaskId);
        front++;
        // make status completed
        for (int i = 0; i < taskcount; i++)
        {
            if (task[i].TaskId == queue[front - 1].TaskId)
            {
                strcpy(task[i].Status, "Completed");
            }
        }
    }
}

int main()
{
    int choice;
    while (1)
    {
        printf("\n1. Schedule task\n");
        printf("2. Run task\n");
        printf("3. Display scheduled Task\n");
        printf("4. Exit\n");
        printf("Enter your choice: ");
        scanf("%d", &choice);
        switch (choice)

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{
case 1:
    printf("\nEnter the task id of the tasks to be scheduled\n");
    for (int i = 0; i < taskcount; i++)
    {
        printf("%d ", task[i].TaskId);
    }
    printf("\n");
    int id;
    scanf("%d", &id);
    for (int i = 0; i < taskcount; i++)
    {
        if (task[i].TaskId == id)
        {
            if (strcmp(task[i].Status, "Idle") == 0)
            {
                enqueue(task[i]);
                strcpy(task[i].Status, "Queued");
            }
            else
            {
                printf("Task is already queued or completed\n");
            }
        }
    }
    break;
case 2:
    dequeue();
    break;
case 3:
    printf("\nQueued tasks are:\n");
    for (int i = front; i <= rear; i++)
    {
        printf("\nTaskId: %d", queue[i].TaskId);
        printf("\tTaskTitle: %s", queue[i].TaskTitle);
        printf("\nTaskDuration: %d", queue[i].TaskDuration);
        printf("\tStatus: %s", queue[i].Status);
        printf("\n\n");
    }

    break;
case 4:
    exit(0);
    break;
default:
    printf("Invalid choice\n");
}
}
return 0;
}

```

