**COMSATS UNIVERSITY ISLAMABAD ATTOCK CAMPUS.**

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**Assignment 01**

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**Course: DS**

**Submitted to: Sir KAMRAN**

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**CODE**

**#include <iostream>**

**#include <string>**

**using namespace std;**

**struct Task {**

**int id;**

**string description;**

**int priority;**

**Task\* next;**

**};**

**class TaskManager {**

**private:**

**Task\* head;**

**public:**

**TaskManager() { head = nullptr; }**

**void addTask(int id, string desc, int priority) {**

**Task\* newTask = new Task{id, desc, priority, nullptr};**

**if (!head || head->priority < priority) {**

**newTask->next = head;**

**head = newTask;**

**} else {**

**Task\* temp = head;**

**while (temp->next && temp->next->priority >= priority)**

**temp = temp->next;**

**newTask->next = temp->next;**

**temp->next = newTask;**

**}**

**cout << "Task added successfully!\n";**

**}**

**void removeHighestPriorityTask() {**

**if (!head) {**

**cout << "No tasks to remove.\n";**

**return;**

**}**

**Task\* temp = head;**

**head = head->next;**

**cout << "Removed task with ID: " << temp->id << "\n";**

**delete temp;**

**}**

**void removeTaskByID(int id) {**

**if (!head) {**

**cout << "No tasks to remove.\n";**

**return;**

**}**

**if (head->id == id) {**

**removeHighestPriorityTask();**

**return;**

**}**

**Task\* temp = head;**

**while (temp->next && temp->next->id != id)**

**temp = temp->next;**

**if (!temp->next) {**

**cout << "Task ID not found.\n";**

**return;**

**}**

**Task\* toDelete = temp->next;**

**temp->next = temp->next->next;**

**cout << "Removed task with ID: " << toDelete->id << "\n";**

**delete toDelete;**

**}**

**void viewTasks() {**

**if (!head) {**

**cout << "No tasks available.\n";**

**return;**

**}**

**Task\* temp = head;**

**while (temp) {**

**cout << "ID: " << temp->id << ", Description: " << temp->description << ", Priority: " << temp->priority << "\n";**

**temp = temp->next;**

**}**

**}**

**~TaskManager() {**

**while (head)**

**removeHighestPriorityTask();**

**}**

**};**

**int main() {**

**TaskManager tm;**

**int choice, id, priority;**

**string desc;**

**do {**

**cout << "\nTask Management System\n";**

**cout << "1. Add Task\n2. View Tasks\n3. Remove Highest Priority Task\n4. Remove Task by ID\n5. Exit\n";**

**cout << "Enter your choice: ";**

**cin >> choice;**

**switch (choice) {**

**case 1:**

**cout << "Enter Task ID: "; cin >> id;**

**cin.ignore();**

**cout << "Enter Description: "; getline(cin, desc);**

**cout << "Enter Priority: "; cin >> priority;**

**tm.addTask(id, desc, priority);**

**break;**

**case 2:**

**tm.viewTasks();**

**break;**

**case 3:**

**tm.removeHighestPriorityTask();**

**break;**

**case 4:**

**cout << "Enter Task ID to remove: "; cin >> id;**

**tm.removeTaskByID(id);**

**break;**

**case 5:**

**cout << "Exiting...\n";**

**break;**

**default:**

**cout << "Invalid choice. Try again.\n";**

**}**

**} while (choice != 5);**

**return 0;**

**}**