Đề cương giữa kì môn Hệ quản trị cơ sở dữ liệu

# **Câu 1: (4 điểm)**

Cho lược đồ CSDL về quản lý xe du lịch như sau:

**XE** (MAXE, BANGSO, THONGTIN)

**CHUYENDI** (MACD, NGAYDI, NOIDUNG)

**CD\_XE** (MACD, MAXE)

Trong đó:

* **NGAYDI**: kiểu date; các cột còn lại kiểu varchar
* **MACD**: là khóa ngoại tham chiếu cột **MACD** trong bảng **CHUYENDI**; **MAXE** là khóa ngoại tham chiếu cột **MAXE** trong bảng **XE**
  1. Viết stored procedure **sp\_KiemTra** nhận vào 2 tham số đầu vào **@macd**, **@maxe** kiểm tra các điều kiện sau, nếu sai thì thông báo lỗi và kết thúc:

1. Mã chuyến đi và mã xe phải hợp lệ (đã có thông tin trong hệ thống) (1đ).
2. Xe **@maxe** có rảnh để thực hiện chuyến đi **@macd** hay không (xe rảnh là xe không có chuyến đi trong ngày tương ứng), nếu xe rảnh thì thêm dữ liệu tương ứng vào bảng **CD\_XE** (1đ).
   1. Viết **AFTER trigger tg\_Xe** cho thao tác sửa dữ liệu trên bảng **XE**, kiểm tra nếu là sửa cột **BANGSO** thì bảng số xe mới phải khác giá trị với bảng số xe cũ và bảng số xe mới sửa không trùng với bất kì bảng số xe hiện có nào khác. (2đ)

# **Câu 2: (2đ)**

Cho lịch trình S1: R1(A), R3(B), R4(A), R2(C), R3(A), W1(A), W2(C), R4(C), R1(C), W3(B), W4(C), W1(C).

1. Tìm tất cả các cặp xung đột có trong S1.

Bài làm:

|  |  |  |  |
| --- | --- | --- | --- |
| T1 | T2 | T3 | T4 |
| Read(A) |  |  |  |
|  |  | Read(B) |  |
|  |  |  | Read(A) |
|  | Read(C) |  |  |
|  |  | Read(A) |  |
| Write(A) |  |  |  |
|  | Wirte(C) |  |  |
|  |  |  | Read(C) |
| Read(C) |  |  |  |
|  |  | Write(B) |  |
|  |  |  | Write(C) |
| Write(C) |  |  |  |

Ta có cặp xung đột trong S1: là 5-6, 7-8, 11 - 12

1. Tính giá trị A, B, C sau khi kết thúc S1 biết:

* W1(A): A = A + 7
* W2(C): C = C – 2
* W3(B): B = B + A
* W4(C): C = C – A
* W1(C): C = C – 7

Bài làm:

Ta có:

* W1(A): A = A + 7 = 11+7=18
* W2(C): C = C – 2 = 22 - 2 = 20
* W3(B): B = B + A = 6 + 18 = 24
* W4(C): C = C – A = 20 - 18 = 2
* W1(C): C = C – 7 = 2 – 7 = -5

Vậy giá trị A, B, C sau khi kết thúc là: A = 18, B = 24, C = -5

# **Câu 3: (2đ)**

Cho lịch trình S2: R3(A), R2(B), R4(D), W1(C), R3(B), R4(C), W2(D), W4(C), R3(C), R1(B).

* Lịch trình S2 có khả tuần tự xung đột hay không? Tại sao? (1đ)
* Nếu có, tìm tất cả lịch trình tuần tự tương đương với nó. (1đ)

Bài làm:

|  |  |  |  |
| --- | --- | --- | --- |
| T1 | T2 | T3 | T4 |
|  |  | Read(A) |  |
|  | Read(B) |  |  |
|  |  |  | Read(D) |
| Write(C) |  |  |  |
|  |  | Read(B) |  |
|  |  |  | Read(C) |
|  | Write(D) |  |  |
|  |  |  | Write(C) |
|  |  | Raed(C) |  |
| Read(B) |  |  |  |

Vẽ P(S2)

(C) (C)

(C)

🡪 P(S2): không có chu trình => S2 là khả tuần tự xung đột.

Giả sử S’ là lịch trình tuần tự tương ứng

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| S2   |  |  |  |  | | --- | --- | --- | --- | | T1 | T2 | T3 | T4 | |  |  | Read(A) |  | |  | Read(B) |  |  | |  |  |  | Read(D) | | Write(C) |  |  |  | |  |  | Read(B) |  | |  |  |  | Read(C) | |  | Write(D) |  |  | |  |  |  | Write(C) | |  |  | Raed(C) |  | | Read(B) |  |  |  | | S’   |  |  |  |  | | --- | --- | --- | --- | | T1 | T2 | T3 | T4 | | Write(C) |  |  |  | | Read(B) |  |  |  | |  |  |  | Read(D) | |  |  |  | Read(C) | |  |  |  | Write(C) | |  | Read(B) |  |  | |  | Write(D) |  |  | |  |  | Read(A) |  | |  |  | Read(B) |  | |  |  | Read(C) |  | |

# **Câu 4: (2đ)**

|  |  |  |  |
| --- | --- | --- | --- |
| T1 | T2 | T3 | T4 |
| READLOCK(A) |  |  |  |
| READ(A) |  |  |  |
|  |  |  | READLOCK(C) |
|  |  |  | READ(C) |
|  | READLOCK(D) |  |  |
|  | READ(D) |  |  |
|  |  | WRITELOCK(B) |  |
|  |  | WRITE(B) |  |
| READLOCK(B) |  |  |  |
| READ(B) |  |  |  |
|  |  |  | WRITELOCK(A) |
|  |  |  | WRITE(A) |
|  |  | WRITELOCK(C) |  |
|  |  | WRITE(C) |  |
|  | READLOCK(B) |  |  |
|  | READ(B) |  |  |

* Cho biết lịch trình trên có xảy ra Khóa chết (Deadlock) không? Giải thích. (1đ)
* Lấy 1 tình huống bất kì cần đến giải thuật ngăn chặn deadlock trong lịch trình trên, trình bày hoạt động của hệ thống khi áp dụng giải thuật wait-die và khi áp dụng giải thuật wound-wait dựa trên nhãn thời gian (timestamp) (1đ).

Bài làm:

(D)

(B) (C)

(A)

Có chu trình. Vậy lịch trình trên xảy ra deadlock.

Ta có:

TS(T1) < TS(T4) < TS(T2) < T3(3)

Wait

(B)

Wound

(C)

Wound

(A)