**Progress test 3**

**Student name: Huỳnh Ngọc Quang**

**Student ID: SE181838**

**Q1. Explain in your words:**

What is the relationship between the key and the address in direct hashing of a file?

Answer:

Each key is mapped directly to a specific address within the file.

The key will be gone through a process called “mapping”, it has a hash function that takes the key as the input and the output will be the direct address, it determines the address where the associated data will be stored or retrieved.

What is the relationship between the key and the address in modulo division hashing of a file?

Answer:

The relationship between the key and the address is established through the use of a hash function and modulo division operation.

In this hashing technique, a hash function is applied to the key to generate a hash value. The hash value represents an index or position within a predefined range of addresses or slots in the file. The modulo division operation is then performed on the hash value, using the total number of available addresses or slots as the divisor.

The remainder of the modulo division operation determines the address or slot where the data associated with the key will be stored or retrieved. This remainder is typically a number within the range of 0 to (total number of addresses - 1).

What are the three database models? Which is the most popular today?

Answer:

Three database models:

1. Hierarchical: This model organizes data in a tree-like structure with parent-child relationships between data records. Each entity has only one parent but can have several children.
2. Network: The entities are organized in a graph, in which some entities can be accessed through several paths. There is no hierarchy.
3. Relational: Data is organized in two-dimensional tables called relations. There is no hierarchical or network structure imposed on the data.

Relational database model is the most popular database model today.

**Q2.**

A

|  |  |  |
| --- | --- | --- |
| **A1** | **A2** | **A3** |
| 1 | 345 | 27 |
| 2 | 386 | 79 |
| 3 | 234 | 23 |
| 4 | 78 | 56 |

Show the resulting relation if you apply the following SQL statements:

|  |
| --- |
| select \*  from A  where A3 = 23 |

Answer:

|  |  |  |
| --- | --- | --- |
| **A1** | **A2** | **A3** |
| 3 | 234 | 23 |

Show the resulting relation if you apply the following SQL statements:

|  |
| --- |
| select \*  from A  where A1 = 5 |

Answer:

|  |  |  |
| --- | --- | --- |
| **A1** | **A2** | **A3** |

Show the resulting relation if you apply the following SQL statements:

|  |
| --- |
| select A1 A2  from A  where A2 = 386 |

Answer:

|  |  |
| --- | --- |
| **A1** | **A2** |
| 2 | 386 |

Show the resulting relation if you apply the following SQL statements:

|  |
| --- |
| select A3  from A |

Answer:

|  |
| --- |
| **A3** |
| 27 |
| 79 |
| 23 |
| 56 |