Question 1

Graphical user interface, text, application

Description automatically generated

**Complexity : O (|P|4)**

Graphical user interface, text, application, email

Description automatically generated

**Complexity : O (2|P|+(|P|2))**

Graphical user interface, text, application

Description automatically generated

**Complexity : O (4|P| + |PxP||PxP|\* time)**

Graphical user interface, text, application, email

Description automatically generated

Graphical user interface, application

Description automatically generated

**Complexity : O (4|P| + |PxP||PxP|\* time)**

Question 2

Graphical user interface, text, application, email

Description automatically generated

**Complexity : O (|P|3)**

Graphical user interface, text, application, email

Description automatically generated

Graphical user interface, text, application, email

Description automatically generated

Graphical user interface, text, application, email

Description automatically generated

Graphical user interface, text, application, email

Description automatically generated

Question 3

|  |  |  |
| --- | --- | --- |
| Number of Records | Original Query | RA Query |
| 10000 | 10.650ms | 10.269ms |
| 100000 | 160.672ms | 166.707ms |
| 1000000 | 2003.811ms | 2006.858ms |

Question 4

|  |  |  |
| --- | --- | --- |
| Number of Records | Original Query | RA Query |
| 1000 | 0.367ms | 1.320ms |
| 10000 | 3.823ms | 9.470ms |
| 100000 | 52.171ms | 116.802ms |

Question 5

|  |  |  |
| --- | --- | --- |
| Number of Records | Original Query | RA Query |
| 1000 | 77.296ms | 1.942ms |
| 10000 | 7118.824ms | 23.220ms |
| 100000 | 719773.839ms | 208.389ms |

Question 6

|  |  |  |
| --- | --- | --- |
| Number of Records | Original Query | RA Query |
| 1000 | 0.378ms | 55.089ms |
| 10000 | 4.276ms | 5387.015ms |
| 100000 | 38.262ms | 629742.483ms |