Testing was carried out by the black box method, the results of which are presented in Tables 1, 2.

Tables 1 – Testing work with the directory «User».

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Description of the test situation | | Input data | | Output data | |
| Hash table (open addressing method) | Record of the user (Login, Location, Age) | Hash table (open addressing method) | Message |
| Addition | | | | | |
| 1 | Adding incorrect data | - | Mallory Jakarta 17 | - | «Incorrect Input» |
| - | Khloe;Moscow;3A | - | «Incorrect Input» |
| 2 | Adding correct data | - | Dennis;Tokyo;21 | Dennis;Tokyo;21 | - |
| 3 | Checking the uniqueness of the key | Dennis;Tokyo;21 | Dennis;Tokyo;21 | Dennis;Tokyo;21 | - |
| 4 | Adding in case of a collision | Eshaan;Jakarta;16 | Khloe;Moscow;39 | Eshaan;Jakarta;16  Khloe;Moscow;39 | - |
| Search | | | | | |
| 5 | Elements Doesn’t Exist | - | Khloe;Moscow;39 | - | - |
| 6 | Element Exist | Jacobson;Jakarta;23 | Jacobson;Jakarta;23 | Jacobson;Jakarta;23 | Jacobson;Jakarta;23 |
| 7 | Search in case of collision | Eshaan;Jakarta;16  Khloe;Moscow;39 | Khloe;Moscow;39 | Eshaan;Jakarta;16  Khloe;Moscow;39 | Khloe;Moscow;39 |
| Deletion | | | | | |
| 8 | Elements Doesn’t Exist | - | Khloe;Moscow;39 | - | «Elements Doesnt Exist» |
| 9 | Element Exist | Eshaan;Jakarta;16  Jacobson;Jakarta;23 | Eshaan;Jakarta;16 | Jacobson;Jakarta;23 | - |
| 10 | Case of collision | Eshaan;Jakarta;16  Khloe;Moscow;39 | Khloe;Moscow;39 | Eshaan;Jakarta;16 | - |

Table 2 – Testing work with the directory «Shop and Product».

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Description of the test situation | | Input data | | Output data | |
| Red-Black Tree | Record of the shop (Product\_name, Shop\_name, Location) | Red-Black Tree | Message |
| Addition | | | | | |
| 1 | Adding incorrect data | - | Sandwich Lenta Moscow | - | «Incorrect Input» |
| 2 | Adding correct data | - | Mac & Cheese;7 Eleven;Jakarta | C:\Users\Administrator\AppData\Local\Microsoft\Windows\INetCache\Content.Word\add1.PNG | - |
| 3 | Adding same data | Tree Construction | Mac & Cheese;7 Eleven;Jakarta | C:\Users\Administrator\AppData\Local\Microsoft\Windows\INetCache\Content.Word\Add2.PNG | - |
| 4 | Adding correct data on existing tree | Tree Construction | Onigiri;Lawson;Jakarta | C:\Users\Administrator\AppData\Local\Microsoft\Windows\INetCache\Content.Word\add3.PNG | - |
| Search | | | | | |
| 5 | Elements Doesn’t Exist | - | Mac & Cheese;7 Eleven;Jakarta | - | «Elements Doesnt Exist» |
| 6 | Element Exist | Tree Construction | Onigiri;Lawson;Jakarta | Tree Construction | Onigiri;Lawson;Jakarta |
| Deletion | | | | | |
| 8 | Elements Doesn’t Exist | - | Строительство строитель | - | «Elements Doesnt Exist» |
| 9 | Element Exist | Tree Construction | Onigiri;Lawson;Jakarta | C:\Users\Administrator\AppData\Local\Microsoft\Windows\INetCache\Content.Word\Add2.PNG | - |
| 10 | Deleting on duplicated data | Tree Construction | Mac & Cheese;7 Eleven;Jakarta | C:\Users\Administrator\AppData\Local\Microsoft\Windows\INetCache\Content.Word\add1.PNG | - |