LAB 8

Team : 3

Group Member:

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1 .A

a. Solution: The sequence SSSXXSSXSXXX of push and pop produce output 325641.

b. The sequence of push and pop cannot produce the output 154623 since 2 is push before 3 and 3 is popped before 2 so the sequence will give 154632.

1.B

We know that each pair collides with probability 1/m if h is chosen at random from a Universal Hash function, H. Let X be a random variable that counts the number of collisions. So, the expected number of collisions is

E[X] = (n C 2) . 1/n^2 = ½[(n^2 –n) /n^2 = ½ [1 – 1/n] < 1/2.

Q2.

|  |  |
| --- | --- |
| Num nodes n | Does there exist a red-black tree with n nodes, all of which are black? |
| 1 | Yes |
| 2 | No |
| 3 | Yes |
| 4 | No |
| 5 | No |
| 6 | No |
| 7 | Yes |

Q3.

|  |  |
| --- | --- |
| Num nodes n | Does there exist a red-black tree with n nodes, all of which are black? |
| 1 | No |
| 2 | Yes |
| 3 | No |
| 4 | Yes |
| 5 | Yes |
| 6 | No |
| 7 | No |