420-B31

# Lab 12 Exercises - Maps

1. What is the load factor for a table with 97 buckets and 35 entries?

It is 0.3608 L

1. Given a map with the following entries:

(1234, "FD"), (2235, "HC"), (9234, "ZM"), (4234, "CV"), (9235, "MB")

Fill in the empty cells of the following table.

| Method | Object State | Return value |
| --- | --- | --- |
| map.put(2347, "SG") | *size*: 6  *map*: (1234, "FD"), (2235, "HC"), (9234, "ZM"), (4234, "CV"), (9235, "MB"), (2347, "SG") | null |
| map.put(1234, "J D") | Size: 6 *map*: (1234, "J D"), (2235, "HC"), (9234, "ZM"), (4234, "CV"), (9235, "MB"), (2347, "SG | null |
| map.get(1234) | Size: 6 *map*: (1234, "J D"), (2235, "HC"), (9234, "ZM"), (4234, "CV"), (9235, "MB"), (2347, "SG") | J D |
| map.get(1500) | Size: 6 *map*: (1234, "J D"), (2235, "HC"), (9234, "ZM"), (4234, "CV"), (9235, "MB"), (2347, "SG") | NULL |

1. If the entries from map are stored in a hash table of size 1000 with open addressing and linear probing, where would each of the entries be stored? (Assume that hash algorithm = number % tableSize.)

|  |  |
| --- | --- |
| Entry | Array index |
| (1234, "FD") | 234 |
| (2235, "HC") | 235 |
| (9234, "ZM") | 236 |
| (4234, "CV") | 237 |
| (9235, "MB") | 238 |

1. If the entries from map are stored in a hash table of size 1000 with closed addressing and chaining, where would each of the entries be stored?

|  |  |
| --- | --- |
| Array index | Entry/Entries |
| 234 | **FD 🡪 ZM 🡪 CV** |
| 235 | **HC 🡪 MB** |
|  |  |
|  |  |
|  |  |