

```
1 import java.util.HashMap;
2 import java.util.Map;
3
4 public class SymbolTable
5 {
6     private Map<String, Integer> symbols;
7
8     /** Creates and initializes a SymbolTable */
9     public SymbolTable()
10    {
11        symbols = new HashMap<>();
12    }
13
14    /** Adds <symbol, address> to the table (void) */
15    public void addEntry(String symbol, int address)
16    {
17        if (!RESERVED_SYM.containsKey(symbol))
18            symbols.put(symbol, address);
19    }
20
21    /** Checks if symbol exists in the table (boolean) */
22    public Boolean contains(String symbol)
23    {
24        return RESERVED_SYM.containsKey(symbol) || symbols.containsKey(symbol);
25    }
26
27    /** Returns the address (int) associated with symbol */
28    public int getAddress(String symbol)
29    {
30        if (RESERVED_SYM.containsKey(symbol))
31            return RESERVED_SYM.get(symbol);
32
33        return symbols.get(symbol);
34    }
35
36    private static final Map<String, Integer> RESERVED_SYM = new HashMap<>()
37    {
38        {
39            put("SP", 0);
40            put("LCL", 1);
41            put("ARG", 2);
42            put("THIS", 3);
43            put("THAT", 4);
44            put("R0", 0);
45            put("R1", 1);
46            put("R2", 2);
47            put("R3", 3);
48            put("R4", 4);
49            put("R5", 5);
50            put("R6", 6);
51            put("R7", 7);
52            put("R8", 8);
53            put("R9", 9);
54            put("R10", 10);
55            put("R11", 11);
56            put("R12", 12);
57            put("R13", 13);
58            put("R14", 14);
59            put("R15", 15);
```

```
60         put("SCREEN", 16384);
61         put("KBD", 24576);
62     }
63 };
64
65 }
66
```