**SOFT8023 – Distributed Systems Programming**

## **Assignment 2 Part 1**

**Worth:** 15%

**Due:** End of Week 12

## Overview

Write a Java socket-based system for a completely bonkers (and barely useful) Alexa or Siri clone. This system is called Bob. So instead of asked, “Alexa, when is Dunnes Stores in Bishopstown open until?”, you will ask “Bob, when is Dunnes Stores in Bishopstown open until?”. Obviously, the name Bob was not well researched.

The client sends a question to the server (e.g. the user is prompted for the question on the console and then sends the question to the server and gets a response). The question will only be sent if it starts with Bob.

The server will access a text file containing questions and potential responses. You can use whatever data structures and mechanisms you like to match questions received to the questions in the file. E.g. you might investigate text similarly libraries available for Java, or you might write a simple algorithm that counts the number of matching words.

Once the best match is found, the response is sent to the client and the client displays the result in the console.

In addition, you must track statistics for total number of client requests and the top 5 most popular questions. The client can send an alternative request, not beginning with Bob, but with some other keywords to get either the total number of requests or the top 5 most popular questions (since the server started up – i.e. no need to store this in a file, in-memory is fine).

## Example run:

Bob, what time is it in Tokyo?

*[Server matches it to something mentioning Tokyo and responds with…]*

Tokyo is the capital of Japan.

\*TotalReqs\*

1

\*Top5Qs\*

1. What is the capital of Japan?

How many moons does Saturn have?

I’m sorry. I don’t understand your command.

Bob, how many moons does Saturn have?

*[Server finds no significant match – matches randomly on something containing the word “does” (or whatever)]*

Exercise can increase blood pressure, but the effects are typically temporary.

Bob, what is the capital of Japan?

Tokyo is the capital of Japan.

\*TotalReqs\*

3

\*Top5Qs\*

1. What is the capital of Japan?

2. Does exercise increase blood pressure?

And so on….

## Marking

Out of 15, the following is how the marks are distributed:

8 – Client and Server classes using a socket for 2-way communication.

4– Functionality does what is asked.

3 – Make this a multi-threaded application to cope with many clients.