

SOFT8023 – Assignment 2

Due: 16 Dec 2022

Value: 30%

Part 1 (16%)

Overview

Using Python Sockets, create an application that allows a remote client to send commands to a server component to get employee details.

Client:

Develop a menu-driven console-based program (using Sockets) that will allow the user to get (a) either current salary or total salary for a given year, or (b) the vacation days taken in a given year or the current annual leave entitlement.

Example run:

```
HR System 1.0
What is the employee id? E00123
Salary (S) or Annual Leave (L) Query? S
Current salary (C) or total salary (T) for year? C
Employee Aadya Khan:
Current basic salary: 38566
Would you like to continue (C) or exit (X)? C
What is the employee id? W01033
Sorry... I don't recognise that employee id
What is the employee id? E01033
Salary (S) or Annual Leave (L) Query? S
Current salary (C) or total salary (T) for year? T
What year? 2018
Employee John Smith:
Total Salary for 2018: Basic pay, 29400; Overtime, 2587
Would you like to continue (C) or exit (X)? C
What is the employee id? E00123
Salary (S) or Annual Leave (L) Query? L
Current Entitlement (C) or Leave taken for year (Y)? Y
What year? 2016
Employee Aadya Khan:
Leave taken in 2016: 22 days
Would you like to continue (C) or exit (X)? C
What is the employee id? E01033
Salary (S) or Annual Leave (L) Query? L
Current Entitlement (C) or Leave taken for year (Y)? C
Employee John Smith:
Current annual leave entitlement: 25 days
Would you like to continue (C) or exit (X)? X
Goodbye
```

Server:

Using Socket programming, accept a connection from a client and handle the options given in the example run, i.e.

- Verify the existence of an employee id. The client sends a value such as "E00123" and we return a Boolean result.
- Knowing the employee id is valid, now can receive commands and options.
- The server must also be able to send back a "not recognised" response for invalid commands / options (and the client must handle it).
- Use 1 or more data structures (hard coded is fine) to store some employee details. Lists, dictionaries or whatever you want can be used.

Part 2 (6%)

Modify the sockets server program to handle multiple simultaneous client connections.

Part 3 (7%)

With such sensitive information, it would be good to keep track of access to the system (i.e . an activity log). Modify the server so that each time a request is received for a employee, a message is sent to a message queue with the employee id, the command and options sent from the client, as well as IP address details. Then write a simple script to print out the activity log details. Use RabbitMQ.

Form (1%)

There will be a separate form to fill in to indicate what you got finished and sample runs of your programs.