



Computer Science 2B

Practical Assignment 00

2023-07-18

Deadline: 2023-07-25 12h00

Marks: 70

This practical assignment must be uploaded to eve.uj.ac.za **before** 2023-07-25 12h00. Late or incorrect submissions **will not be accepted**, and will therefore not be marked. You are **not allowed to collaborate** with any other student.

Make use of [proper coding conventions](#) and [documentation](#). Marks will be deducted if these are not present. Your submission should include a batch file.

The reminder page includes details for submission and queries. Please ensure that **ALL** submissions follow the guidelines. The reminder page can be found on the last page of this practical - read the reminder page carefully.

This practical will focus on creating basic socket connections and querying connection information.

Create a Java application that will test for open port numbers and display the current computer's IP address (not the loopback address). Create a socket connection to the **localhost** of the machine to test the connection for port numbers between 1 and 65535. Your application should test if a connection is possible with **every third** port number starting from 1. The moment a successful connection is made, additional information about the socket should be displayed.

An example of the command line output should be:

```
Could not connect to localhost port: 1
Could not connect to localhost port: 4
...
Program connected to localhost port: 25
Local port of the connection: 51344
Remote port of the connection: 25
Could not connect to localhost port: 28
...
```

The computer IP Address is: 152.106.59.111

Bonus

Create a JavaFX Graphical User Interface (GUI) for your application. You may use any GUI elements that would allow for the effective launch and display of information required by the program.

Marksheet

- | | |
|--|--------------|
| 1. Display IP Address (Hint - It is not 127.0.0.1 or localhost) | [10] |
| 2. Create a Socket Connection. | [5] |
| 3. Display port numbers' connection status. | [10] |
| 4. Display local and remote ends of established connections. | [5] |
| 5. Error handling. | [5] |
| 6. Coding convention (structure, layout, OO design). | [5] |
| 7. Commenting (normal and JavaDoc commenting). | [5] |
| 8. Correct execution (if it doesn't run from your batch file you get 0). | [25] |
| 9. JavaFX GUI. | [10 (bonus)] |
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NB

Submissions which **do not compile** will be capped at 40%

The awarding of marks is dependent on the student's ability to effectively justify and demonstrate understanding of the practical work presented.

Execution marks are awarded for a correctly functioning application and not for having some related code.

Reminder

Your submission must follow the naming convention as set out in the general learning guide:

SURNAME_INITIALS_STUDENTNUMBER_SUBJECTCODE_YEAR_PRACTICALNUMBER

Your submission must include the following folders:

- `bin` - (*Required*) - Should be empty at submission but will contain runnable binaries when your submission is compiled.
- `docs` - (*Required*) - Contains the batch file to compile your solution, and any additional documentation files. All documentation files must be in **PDF** format. Your details must be included at the top of any **PDF** files submitted. **Do not include generated JavaDoc.**
- `src` - (*Required*) - Contains all relevant source code. Source code must be placed in relevant sub-packages! Your details must be included at the top of the source code.
- `data` - (*Optional*) Contains all data files needed to run your solution.
- `lib` - (*Optional*) Contains all libraries needed to compile and run your solution.

Every submission **must** include a batch file that contains commands which will:

- Compile your Java application source code.
- Compile associated application JavaDoc.
- Run the application.

Do not include generated JavaDoc in your submission. All of the classes/methods which were created/updated need to have JavaDoc comments.

Note that only **one** main submission is marked. If you have already submitted once and want to upload a newer version, then submit a newer file with the same name as the uploaded file in order to overwrite it.

Bonus submissions should be uploaded separately and clearly named as the bonus submission - which will then be marked accordingly.

It is important to make use of **each practical opportunity** as preparation for the practical semester test (ST2). The practical assignments also contribute to the **Practical Component Mark** (PCM). There will be 9 practical assignments (P00-P08) this semester which will be released on a weekly basis except when tests are being written.

The process to **query** your practical assignment with an assistant is discussed in the learning guide as well as the first practical lecture.