Programming Assignment 1: Displaying the User Agent

Context/Scenario

For each request arriving at the HTTP server, Nodejs provides a request object that contains some of the HTTP header information. This information includes the name of the user agent used to send the request. In this context the user agent is the computer program representing the person who sent the request, and, in most cases, it represents the name of the web browser used on the client computer.

Instructions:

The Assignment consists of two parts.

Part 1 – Base Code: The task for this part is completed offline and represents the base of your code that you will add to in Part 2. The code for Part 1 must be submitted as a separate file.

Part 2 – Skill Demonstration: The task for this part will be recorded **as completed**. Note that in your recording it is not sufficient to only write the code, but you must also explain the logic and describe how your logic is being implemented. In addition, your recording must show a sample run that demonstrates the correct execution of your code.

Important Guidelines:

- The recording **should not exceed 15 minutes** in duration. Otherwise, the recording will not be considered.
- The code for Part 1 should be the starting point for your implementation of Part 2.
- The code for Part 2 must be developed during the recording. Ready-made code will not be accepted.
- To ensure that your recording will be accepted for grading, it is essential to show both your face and your screen while demonstrating the development steps of the code and explain each step as it is developed.
- Your presentation needs to be clear, concise, and effectively communicate the steps and logic of your solution.
- Use the grading rubrics as a guide to prepare your presentation.
- Using Frameworks and/or advanced techniques not covered in class will result in a 0 grade.
- Providing code that is copied from ChatGPT and reading the accompanying explanation generated by ChatGPT will not be accepted as a valid skill demonstration for this assignment. This practice will result in a grade of 0.
- Resubmission of the assignment after the due date is not allowed.

Please ensure that your recording adheres to these guidelines to receive full credit for your submission.

Assignment Description

Part 1 – Base Code: Identify the User Agent

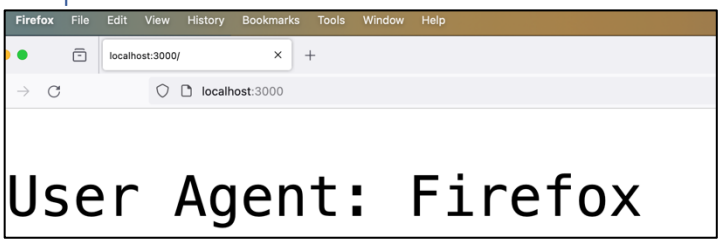
In Lab 1 you have developed a basic Nodejs HTTP server that displays the request headers, the request URL, and the request method. In this task you will adapt the code to do the following tasks:

1. Detect the name of the agent used to send the request. You need to detect at **least 3** user agents. For example, Firefox, Chrome, and curl.
2. Respond to the client by a string containing the name of the user agent (see the sample run below).

Hint:

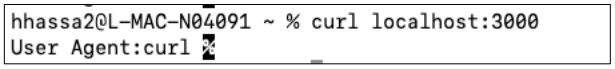
- Check for name of the browser in the user-agent value using include() method defined on JS strings https://www.w3schools.com/jsref/jsref_includes.asp.
- Respond with 'Undetected User Agent' in case the browser is not identified.

Sample Run 1:



Sample Run 2:

Sample Run 3:



Part 2 – Skill Demonstration: Detect the Preferred User Agent

Adjust your implementation such that your code will perform the following

1. count the number of times a user agent has been used and will reply to the client side with the name of the user agent used as well as the number of requests received so far.
2. Print to the terminal on the server side the name of the user agent from which the maximum number of requests have been received so far. Note that if the number of requests from several agents are equal then any of the user agents can be identified as the preferred user agent.

Sample Run:

The images below show a sequence of requests sent to the server and the corresponding responses received as well as the messages printed to the terminal at the server side.


```
hhassa2@L-MAC-N04091 ~ % curl localhost:3000/
User Agent:curl
No of Requests received = 1
hhassa2@L-MAC-N04091 ~ % curl localhost:3000/
User Agent:curl
No of Requests received = 2
hhassa2@L-MAC-N04091 ~ % curl localhost:3000/
User Agent:curl
No of Requests received = 3
hhassa2@L-MAC-N04091 ~ %
```

Terminal output on the Server-side

```
hhassa2@L-MAC-N04091 SkillDemonstration % node SD1part2.js
Server running on 3000
The preferred agent is Firefox
The preferred agent is Firefox
The preferred agent is Firefox
The preferred agent is Firefox
The preferred agent is curl
```

Deliverables

Submit all your .js files as one zipped folder. Your folder will include the following:

- A video recording not exceeding 15 mins
- A .js file for part 1
- A .js file for part 2

Grading Rubrics:

This assignment is graded out of **100**.

Part 1: 10 Points

Criteria	Points
Comment describing the task for Part 1 at the beginning of the file	**5**
The code submitted for Part 1 coincides with the starting code shown in the recording for Part 2	**5**
Total	**10**

Part 2: 90 Points

Criteria	Points
Comment describing the task for Part 2 at the beginning of the file	**5**
Overview of Part 1 Code	**10**
• Give a quick description of the logic implemented by the code.	10
Implementation of user agent counting	**10**
• State the datatype and/or data structure used	5
• Justification for the choice made	5
Reply to the client	**10**
• Identify the statement used in part 1 to reply to the client side	5
• Implement and state the changes that need to be made to the reply from part 1 to include the number of requests in the reply for part 2	5
Detecting the Preferred User Agent	**15**
• Explain the logic for detecting the preferred user Agent	5
• Mapping the logic to the implementation in the code	5
• Displaying the User Agent name to the terminal	5
Sample run Walkthrough	**40**
• State the user agents to be used for testing the execution	5
• Executing using the command line	5
• Showing replies received at the client side from 3 different user agents	15
• Creating a scenario to show how the preferred user agent changes based on the requests received at the server similar but not necessarily identical to the Sample run	15
Total	**90**