



THE UNIVERSITY OF WINNIPEG

Applied Computer Science
ACS-3909
Advanced Internet Programming

Winter 2024

Assignment 1

Due date: Feb 9, 2024, 11:59 pm (CST)

Total Marks: 37

Objectives

Gain a solid understanding of Node.JS, web servers, and various Express features. In this assignment, you will create a simple web server that serves a homepage, informational content, and an image. This assignment is an excellent opportunity to practice using HTML tags, elements, and attributes, as well as various CSS styles. Additionally, this task will help enhance your modularity skills by separating the CSS file from the HTML file.

Task One (10 marks): Include your responses to the following questions in a Word document, PDF, or text file.

a) (3 marks) Describe the reasons that Node.JS is able to outperform traditional web servers like Apache while requiring fewer system resources.

b) (3 marks) Does JavaScript support prototypal inheritance? Explain your answer with an example.

c) (1 marks) What is the command to install a package named **express** globally?

d) (1 marks) What is the command to install a package named **express** with version number **4.16.4**?

e) (2 marks) What are the differences between the versions of the following packages? i.e., what do the symbols ~ and ^ mean? What does it mean if we don't include either?

```
"dependencies": {  
  "express": "~4.17.2",  
  "underscore": "^1.13.2",  
  "express-handlebars": "4.0.1"  
}
```

Task Two (27 marks): For each of the following questions, organize your solutions in separate folders. For instance, complete Q1 in a folder named "Q1", complete Q2 in a folder named "Q2", and so forth.

Q1)(10 marks) Create a Node.js web application that follows the class lectures. Your web server should display a homepage containing your name, student number, and a photo of you or your favorite meme. Use the paths '/', '/about', and '/img/favPhoto' to serve static files **home.html**, **about.html**, and **favPhoto.jpg**, respectively. For any other paths, serve the **notfound.html** file.

1 mark for correct JavaScript, 1 mark for each of the 4 required files, and 5 marks are for students that customize the design of the website.

Q2)(5 marks) Adapt your solution from Q1 to compress the response using Gzip before sending it to the client.

3 marks are awarded for the Node.js solution that compresses the output. Adhere to best practices when coding in Node.js and include comments within your code. The remaining 2 marks are given to results that demonstrate the successful compression of files sent to the client.

Q3)(5 marks) Modify your solution to Q1 using Express instead of Node.JS alone.

5 marks are based on the degree in which your solution uses express. In other words, your solution cannot be missing any of the main components discussed in class.

Q4)(7 marks) Create an Express web application that hosts the file feedbackForm.html (provided with this handout) and displays all submitted content on the server console. Ensure that the feedbackForm.html fields for "First Name", "E-mail Address", and "Phone Number" correspond to your first name, university email address, and student ID, respectively.

Hint: You may want to use the body-parser module to answer this question.

Your score will depend on how well your solution accomplishes the given task, with 5 points being awarded based on the extent of its performance. It is essential to employ Express in your solution. Failure to adhere to the instructions will result in a deduction of 2 points.

Submission Instructions

Combine all files and folders into one compressed archive named *StudentNumber_Assignment1.zip*. Submit the zip file through Nexus. **Ensure that your node modules folders are NOT included.**