AMERICAN UNIVERSITY OF BEIRUT

Maroun Semaan Faculty of Engineering and Architecture

Department of Electrical and Computer Engineering

EECE 350 – Computer Networks – Section 3

Course Project – Spring 2019-2020

Shopping Cart Project

Overview

Online stores (Amazon, Newegg, Zappos, Half.com) offer the notion of a shopping cart. Just as MP3 players often have a "rewind" button even though the physical notion of rewinding no longer exists, shoppers have come to expect an online cart to have the same features as a physical cart: temporarily holding items until purchase, removals and additions, and so on. Application visitors can usually place items in a cart before logging in or identifying themselves, and may be able to retain a cart's contents across sessions. Large retailers typically implement their own shopping cart applications, but smaller ones often use third-party services, such as Opencart, Shopify, PayPal, and Stripe.

In this project, you will implement a basic shopping cart application with two user interfaces: one for a shopper (***client*** for purchasing items), and one for a shopkeeper for holding and serving a list of items with their info, including prices. The shopkeeper will be the ***server***.

The client can request a list of available items, ask for the price of a given item, and adds items to the cart (all through contacting the server). It can also checkout, thus prompting the server to compute the total bill value and return it to the shopper for payment. Payment is submitted to the server (in electronic money), and then the process is completed.

For the above transactions, you will need to develop your own protocol between the client and the server, and then implement it using a TCP client/server system, where the server must be multithreaded.

The user interface can be graphical or console-based, but must be clear and "friendly". The above represent the minimum requirements. You are welcome to add features that you deem add value to the application, which may earn you extra credits.

Acknowledgement:

The above project *idea* was taken from the MIT OpenCourseWare website:
https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-170-software-studio-spring-2013/projects/project-2-shopping-cart/

Deliverables

Phase 1: Basic Components (due April 3)

In the first two phases, you'll design and implement a basic shopping application with these minimal requirements:

- Working TCP client and multithreaded server that can communicate. The communication can be a request of a simple information and a corresponding reply.
- Design of the communication protocol (commands, sequence, error handling, etc.)
- 20% of the project grade will be assigned to this phase
- You will submit the code for the client and server along with the communication protocol design (pdf) through Moodle.

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Phase 3: Implementation of your Shopping Cart (due April 30)

Here, you will complete your project by completing at least the above features. This includes all the operations involved in adding items to the cart, and paying the bill. Moreover, a user interface is needed for the client to perform the operations. An example of an added capability (optional) that will earn you extra points is developing another client who will be the manager of the store, who wants to compute the amount of sales and the profit made.

This phase will involve a demonstration:

1. During the demo, each student will be asked about the design, code, implementation, application functionality, as well as his/her contribution.
2. Any evident cheating or unusual commonality will jeopardize the project grade, and could result in disciplinary actions.

Grading:

- Readability of the code: 3%
- Brief user manual: 2%
- Communication protocols design: client $\longleftrightarrow$ server: 10%
- Functionality of client and server: 65%
- Presentation and answers during demo: 10%
- UI design and functionality: 10%

Questions or Clarifications:

For any all questions related to the project, contact Mr. Jad Matta on jm97@aub.edu.lb

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