

CST 3130 - Coursework 1: Price Comparison Website

1. Summary

Version: 1.0

Individual project

Weighting: 50% of overall mark

Deadline for project proposal: 16:00 Friday 13th October 2023 (end of Week 3)

Deadline for final submission: 16:00 Friday 15th December 2023 (end of Week 12)

2. Key Points

- You build a price comparison website that displays products and their prices from several different websites.
- The user can search for products on the website.
- Shopping functionality and customer registration/login are not required.
- Your website provides links that enable users to navigate to the product on the original website.
- You can propose a different type of project based on scraped data from multiple websites - for example a property search website.
- Website scraping must be done using Java.
- You must use a SQL database to store your data. MySQL or MariaDB is recommended.
- Several threads should be used to download data.
- There are marks for using Spring, Hibernate and Maven.
- The back end of the website must be implemented in JavaScript running on Node.js. No marks are available for functionality that is implemented in other programming languages.
- Your application includes a REST API. This can be integrated into your front end (via AJAX). Or it can be a separate web service that enables third parties to access your data.
- The front end must be written in HTML, CSS and JavaScript. You cannot write an app.
- There are marks available for the quality and quantity of data that you have scraped.
- Marks are available for code quality, unit testing and the front end of the website.
- The final submission of your project must include a video demonstration that shows all the functionality.

3. What Needs to be Submitted

3.1 Project Proposal (Deadline: 16:00 Friday 13th October 2023)

Submit a zip file that contains:

1. *Proposal document.* This must contain:
 - Brief description of the proposed website.
 - Wireframe sketches of the website or screenshots of early prototype.
 - List of websites and URLs that will be scraped.
 - Diagram showing database design.

The proposal document must be in Word or PDF format.

2. *Database SQL commands:*
 - File containing the SQL commands that are used to create the database. This can be a dump of your implementation of your database design or a text file containing the SQL commands that were used to create the database.

Upload the zip file using the link in the Coursework 1 section of the course website.

We will use the project proposal to give you feedback about your idea and help you realize it in the time available. You can reuse material from the project proposal in the final project submission.

The project proposal is worth 10% of the mark for Coursework 1.

3.2 Final Submission (Deadline: 16:00 Friday 15th December 2023)

Submit a zip file that contains:

1. *Project report.* This must include:
 - Screenshots showing all of the website's key functionality.
 - Description of the website. You should explain the web scraping, the RESTful web service and how the JavaScript displays the data.
 - Diagram showing the final database design.
 - Documentation of the tests.

The project report must be in Word or PDF format.

2. *Source code.* Your source code folder should contain the following files:
 - Maven build file (pom.xml).
 - Spring configuration file(s) (beans.xml). Not needed if you are using annotations.
 - Hibernate configuration file(s).
 - Java source code for web scraping.
 - Java source code for unit tests.
 - Java API documentation.
 - Node.js JavaScript source code.
 - JavaScript source code for unit tests.
 - Front end source code for website (JavaScript, HTML, CSS).
 - Other source files for website, for example. Vue files etc.
 - **Please do not include the node_modules folder in your submission. It is likely to make your submission too large to upload!**
3. *Database dump:*
 - Dump of the database and data using mysqldump or a similar tool. No marks will be awarded for a copy of the raw database files – your dump must be readable in a text editor.
4. *5-minute video demonstration.* We use the video demonstration to mark your project. **You will lose marks if you do not submit a video demonstration or if you do not show all of your code working in your video demonstration.** I strongly recommend that you watch the talk on recording video demonstrations on the course website.

Upload the zip file using the link in the Coursework 1 section of the course website.

The final submission is worth 90% of the mark for Coursework 1.

4. Formative Feedback

Formative assessments do not directly contribute to the overall module mark but they do provide an important opportunity to receive feedback on your learning. They provide an opportunity to evaluate and reflect on your understanding of what you have learnt. They also help your tutors identify what further support and guidance can be given to improve your grade.

We are happy to give you formative feedback about Coursework 1 in the labs and can also give formative feedback about drafts of Coursework 1 that are sent to us more than one week prior to the deadlines.

5. Extenuating Circumstances

If you have personal problems that interfere with your studies, you can apply for extra time to complete coursework without a mark penalty. You have to provide appropriate documentary evidence.

More information here: <https://unihub.mdx.ac.uk/your-study/assessment-and-regulations/extenuating-circumstances>.

You must let the module leader know if you have been granted an extension.

6. Late Submission

We are very unlikely to give extensions to coursework and very unlikely to accept excuses. So we strongly recommend that you hand coursework in on time. Contact the module leader before the deadline if you run into problems.

Each submission has a two-hour window (16:00-18:00) within which you can upload your work without a mark penalty. If you submit later than this (within five calendar days of the original deadline), then your mark will be capped at 40% of the marks available. Work submitted more than five days after the original deadline will receive zero marks.

Students registered with the Disability and Dyslexia Service, who have a Learning and Support Form (LSF), can submit within five calendar days of the original deadline without capping.

7. Plagiarism

Plagiarism is a serious academic offence. Students that submit identical projects will be reported to the university. If they are found guilty, they will have to resubmit their work, their marks could be capped or they could fail the module.

We recognize that there is often a blurry line between copying and collaboration. People work together and help each other to solve problems and apply the solutions to their own projects. We strongly encourage this kind of collaboration. But it is not acceptable for students to collaborate on a project which they submit as individual work. To penalize this, the mark for near-identical projects will be divided between the projects. So suppose a project gets a mark of 60% and near-identical versions are handed in by 3 people. Each person will get 20%, instead of 60%. This only applies to the marks for the parts of the project that are identical.

We are not going to police this and make detailed investigations. So if you allow your project to be copied, you will be as liable for plagiarism as the person who submits it as their own work. Both the original and the copy will receive zero or reduced marks.

Links to the relevant University regulations and additional support resources can be found here:

- Full details on academic integrity and misconduct and the support available can be found at: <https://unihub.mdx.ac.uk/study/academic-integrity>.
- The Academic Integrity and Misconduct policy is available in our Public Policy Statements (under Academic Quality) at: <https://www.mdx.ac.uk/about-us/policies>.
- Referencing & Plagiarism: Suspected of plagiarism?: <https://libguides.mdx.ac.uk/c.php?g=322119&p=2155601>.
- Referencing and avoiding plagiarism: <https://unihub.mdx.ac.uk/study/writing-numeracy/awl-resources/writing>.

The Middlesex University Students' Union (MDXSU) Advice Service offers free and independent support in making an appeal, complaint or responding to any allegations of academic or non-academic misconduct: <https://www.mdxsu.com/advice>.

8. Assessment Methods

8.1 Project Proposal

We will read your project proposal, look at your SQL and give you feedback online and in the labs.

8.2 Final Submission

We will look at the code, read your report and view up to 5 minutes of your video demonstration. Your video demonstrations should not be significantly longer than 5 minutes. **You will lose marks if you do not submit a video demonstration or if you do not show all of your code working in your video demonstration.** I strongly recommend that you watch the talk on recording video demonstrations on the course website.

The project will be given a mark out of 100. This will be scaled down to a mark between 0 and 50 that corresponds to 50% of the overall mark for the module.

9. Assessment Criteria

Feature	Deadline	Marks
<p>Project proposal. Must include:</p> <ul style="list-style-type: none">• A short description of the website.• Wireframes of the design or screenshots of an early prototype.• List of websites and URLs that will be scraped to obtain data for the project.• Diagram showing database design.• mysqldump file containing implementation of your database design or a text file containing the SQL commands that were used to create the database. <p>Marks are available for the quality of the proposal – for example, writing, wireframe and diagram quality.</p>	<p>16:00 13/10/23</p>	<p>2 marks. Description of the website.</p> <p>2 marks. Wireframes or screenshots of website pages.</p> <p>1 marks. List of websites and URLs that will be scraped to obtain data for the project.</p> <p>1 marks. Diagram showing database design.</p> <p>1 marks. SQL file containing commands used to create database.</p> <p>3 marks. Proposal quality. Is it clearly written? Are the data sources sensible? Do the wireframes clearly show the website design?</p>
<p>Threads. Use of multiple threads to pull data from several websites.</p>	<p>16:00 15/12/23</p>	<p>5 marks. Two or more threads successfully used to pull data from two or more websites.</p>

Maven. Use of Maven to build Java software. You can use other build tools, such as Ant or Gradle.	16:00 15/12/23	2 marks. Use of Maven or similar tool to build Java software. 1 mark. Use of Maven or similar tool to run unit tests. 2 mark. Use of Maven or similar tool to build executable Jar file that includes all of the dependencies.
Spring. Use of Spring to manage the dependencies between several Java classes.	16:00 15/12/23	5 marks. Spring used to manage dependencies between several Java classes.
Hibernate. Use of Hibernate to store data in database.	16:00 15/12/23	5 marks. Hibernate used to store data from websites.
Web scraping. Download of data from third party websites using JSoup or similar tool. You must use Java for web scraping.	16:00 15/12/23	10 marks. Download of data from five third party websites. Usually 2 marks will be given per scraper. The full 10 marks may be awarded in cases where suitable data is only available on fewer websites or more complicated scraping is required.
Data. You must use a SQL database. Higher marks are awarded for projects that have more data, more complex tables, efficient data storage, clean data and sensible SQL naming conventions.	16:00 15/12/23	2 marks. Database contains more than 500 rows of data. This must be data scraped from third party websites – manual entry is not allowed. 2 marks. Database contains 2 or more tables with foreign key relationships. 2 marks. Database normalization. Elimination of duplicate data through database normalization. 2 marks. Data cleaning. Scraped data has been processed to eliminate duplicates, irrelevant text and missing fields. 2 marks. Sensible use of SQL naming conventions.
Testing. Marks for tests will only be awarded if the source code is submitted and screenshots of the results are included in the final report. You must test the functionality of your code. Zero marks will be awarded for trivial tests, such as tests of getters and setters. All tests must be passed.	16:00 15/12/23	5 marks. Java unit testing with JUnit (1 mark per test). 5 marks JavaScript unit testing with Mocha/Chai or similar framework (1 mark per test). These marks can also be awarded for meaningful tests of your REST API.
REST API. Implemented in Node.js.	16:00 15/12/23	5 marks. Implementation of REST API with Node.js. Higher marks will be awarded to better implementations. This can be integrated into your front end (via AJAX). Or it can be a separate web service that enables third parties to access your data.
Product display. User can search for products and compare product prices from multiple websites. Pagination is used	16:00 15/12/23	2.5 marks. User can search for products. 2.5 marks. Similar products from different websites are displayed along with their prices.

when there are a large number of products.		2.5 marks. Products are displayed across several pages and user can move backwards and forwards through the pages of products.
Website quality. How well does it display data, allow user to interact with data etc.	16:00 15/12/23	7.5 marks. Website is attractive and easy to use.
Code quality. For example, comments, layout, organization, etc.	16:00 15/12/23	2 marks. Java code quality. 2 marks. Correct use of Java naming conventions. 4 marks. API documentation with JavaDoc. 2 marks. JavaScript code quality.
Project report. Briefly describes the project.	16:00 15/12/23	2 marks. Screenshot(s) showing all of the website's key functionality and the results of unit tests. 4 marks. Content of report. Does it clearly describe the project? You should explain the web scraping, the RESTful web service and how the JavaScript displays the data. 2 marks. Diagram showing final database design. 2 marks. Submission of SQL file that contains the commands that create the database and the data from database.