INTERNATIONALE HOCHSCHULE

PORTFOLIO

Assignments for the course: Project Java and Web Development (DLBCSPJWD01)

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1. TOPICS AND TASKS

Within the framework of this course, one of the following topics must be selected.

1.1. Task: Develop a web application

In this project you will develop a web application of your choice. The most important outcome is that you deliver a functioning application, i.e. UI mockups and design flows are not sufficient as the main deliverable. The purpose of this project is to realize an idea in code, not on paper. Even though the overall details of the project are up to your creativity and interests, your project must meet the following criteria:

- Your application front-end should be written in either HTML, CSS.
- Alternatively, you have a choice to use Web Component Frameworks, such as Java Server Faces or JavaScript based frameworks such as React.js or Vue.js as well.
- Your front-end should have at least two dynamic aspects, which you can develop in any technology you prefer (e.g. JavaScript, PhP, JSF, etc.).
- The front-end should be responsive, i.e. when you resize the browser to different view port dimensions, the webpage must continue to be readable.
- Your front-end must communicate with a server backend, where the backend receives request to either send data back to the front-end or stores data in the backend.
- The backend server could be anything from an external API (e.g. Airtable), a Database or a nodejs. You can choose based on your expertise and preferences.
- The application must run in a web browser
- The software must be appropriately documented, i.e. code documentation. Appropriate means sufficient documentation in the code for another developer to understand intent and execution.
- The software architecture should be documented including design choices.
- The source code and any necessary installation files should be exported to a folder and MUST include sufficient information for installation. This folder will be zipped later and uploaded in phase 3.
- A short video / screen cast must be prepared to demonstrate the final application. The video/screencast should not exceed 2min.

Implement a web application in the following 3 phases:

1.1.1. Conception phase

This phase represents the most important part of the design process. In this phase you will *make design decisions* on what your web application is going to be about and how you want to build it, i.e. the technology you want to use both on the front-end and back-end of your application.

The first step is to create a *brief written concept*. The concept should illustrate the target user group for your web application, the benefit of a user using the application and the technical components required to meet the overall user requirements. It is important for you to document this *both in words and with one diagram* to illustrate the high-level architecture and your choices of software technologies to be used for frontend and backend. Remember, you have very little constraints in your choices, hence you have an opportunity to play to your strength and interests with the choices you make.

Keep in mind, this is conceptual. Do not start building in this phase but think through what it is that you want to build and have a somewhat clear idea, how you want to do it.

Your deliverable for Phase 1 is the conceptual design document, which cannot exceed 1 page.

For your submission, please submit on PebblePad as a PDF. You may submit other relevant information into PebblePad text field (limited to ½ Din A4 page) as you see fit.

Throughout the process, online tutorials are offered and they provide an opportunity to talk, share ideas and/or drafts, and obtain feedback. In the online tutorials, exemplary work can be discussed with the tutor. Here, everyone has the opportunity to get involved and learn from each other's feedback. **It is recommended to make use of these channels to avoid errors and to make improvements.** You should only submit work after making use of the above-mentioned tutorial and informative media. This will be followed by a feedback from the tutor and the work on the second phase can begin.

1.1.2. Development phase/reflection phase

In this phase, you will *start implementing*. In professional software development, there are many steps to converge towards your desired end state. In the context of this project, you should focus on coding until you web application works. This will require several iterations until you achieve a state that represents the end-state you had in mind and documented in the conception phase. Specifically, in this phase, you will:

- Code
- Fix bugs
- Refine your idea from the conception phase
- Google for solutions for challenging parts of your solution
- Code

In addition you will:

- Upload your code in a GitHub respository. If you do not have a public GitHub account, please create one and learn how to manage your code in GitHub. (Your final submission will require that you have all your code assets organized in GitHub, hence, it is advisable to start familiarize yourself in this phase and use GitHub to manage different iterations of your code)
- Comment your code
- Document changes you may have made compared to your conception phase proposal
- Define test data and test cases for your solution

Your deliverable for Phase 2 is a presentation (not more than 10 slides excluding Title slide) with the following content:

- Title-slide should include the link to your public GitHub repository
- One slide explaining the purpose of the web app
- Architecture diagram of your solution
- An overview of technology choices for front and backend (e.g. HTML, CSS, JavaScript + NodeJs + Morgan + Airtable)
- Screenshots of your web application with explanations
- One chart on what you have decided to change compared to your proposal and why
- Prepare a 1-2min screencast video of your current state of the web application and attach as the last slide

For your submission, please submit the presentation into PebblePad. Please add the link to your public GitHub repository in the text-field in PebblePad.

Throughout the process, online tutorials and other channels provide the opportunity to profoundly discuss ideas and/or drafts and to get sufficient feedback, tips, and hints. **It is recommended to use these channels to avoid errors and to improve your work.** Once this is done, you can hand in your second phase for evaluation. Following a feedback from the tutor, your work on the final draft will continue in the third phase.

1.1.3. Finalization phase

In the finalization phase, the goal is to *optimize the solution* after having received feedback from the tutor, and to complete the task. Certain elements may have to be improved or changed again to finalize the task and complete the portfolio course. It is important that you consider the feedback that you received on your submission at the end of the previous phase. Depending on the changes you make in your software, it might be necessary to provide an updated version of the documentation. Make sure your software comes with installation and run instructions so that it is clear how to install the application.

All essential content of your work is in your GitHub repository which contains the following deliverables:

1. Your code folders, including all code + libraries necessary to deploy and run the web app
2. Provide installation and run instructions in the README.md file in your GitHub repository
3. Include one additional folder in your repository, called *docs_phase3* in which you will upload any other documentation + *a 1-2 min screencast of your final product*

Your deliverable for Phase 3 is a 2-page abstract PDF document in which you describe your solution in terms of content and concept. The abstract presents a short break-down ("making of" of the project) about the technical approach in a clear and informative way. Please include lessons learned.

For your submission:

1. Upload the 2-page abstract in PebblePad as a pdf.
2. Attach a .txt file with a link to your public GitHub repository in PebblePad.
3. Export your GitHub repository as a ZIP file and put it into a folder. You must zip and upload this folder in your submission in PebblePad.

In the "Finalization phase", the online tutorials and other channels also provide the opportunity to obtain sufficient feedback, tips, and hints before the finished product is finally handed in. **It is recommended to use these channels to avoid errors and to make improvements**. The finished product is submitted **with the results from Phase 1 and Phase 2** and together with the materials mentioned above. Following the submission of the third portfolio page, the tutor submits the final feedback which includes evaluation and scoring within six weeks.

2. TUTORIAL SUPPORT

In principle, several channels are open to attain feedback for the portfolios. The respective use is the sole responsibility of the user. The independent development of a product and the work on the respective portfolio parts is part of the examination performance and is included in the overall assessment.

On the one hand, the tutorial support provides feedback loops on the portfolio parts to be submitted in the context of the conception phase as well as the development and reflection phase. The feedback takes place within the framework of a submission of the respective part of the portfolio. In addition, regular online tutorials are offered. These provide you with an opportunity to ask any questions regarding the processing of the portfolio and to discuss other issues with the tutor. The tutor is also available for technical consultations as well as for formal and general questions regarding the procedure for portfolio management.

Technical questions regarding the use of “PebblePad” should be directed to the exam office via mail.

3. EVALUATION

The following criteria are used to evaluate the portfolio with the percentage indicated in each case:

Evaluation criteria	Explanation	Weighting
Problem Solving Techniques	*Capturing the problem *Clear problem definition/objective *Understandable concept	10%
Methodology/Ideas/Procedure	*Appropriate transfer of theories/models *Clear information about the chosen Methodology/Idea/Procedure	20%
Quality of implementation	*Quality of implementation and documentation	40%
Creativity/Correctness	*Creativity of the solution approach *Solution implemented fulfils intended objective	20%
Formal requirements	* Compliance with formal requirements	10%

The design and construction of the portfolio should take into account the above evaluation criteria, including the following explanations:

Problem Solving Techniques: Clear scope as well as comprehensibility of the project. Use of appropriate technologies, libraries and services, understandable architectural choices and functionality of the web application.

Methodology/Idea/Procedure: Development and architectural decisions, recognizable design and technology decisions, meaningful choices.

Quality of implementation: Visible concepts of software development, clean code, adherence to consistent documentation of code, compliance with the acceptance criteria outlined in chapter 1.

Creativity/Correctness: Originality of solution, correctness of the solution as verified by testing.

Formal requirements: The submission follows the acceptance criteria from Chapter 1 and the formal guidelines following in the next chapter. It is particularly important to respect the formal submission requirements outlined in Chapter 4.

4. FORMAL GUIDELINES AND SPECIFICATIONS FOR SUBMISSION

4.1. Components of the examination performance

The following is an overview of the examination performance portfolio with its individual phases, individual performances to be submitted, and feedback stages at one glance. A template in "PebblePad" is provided for the development of the portfolio parts within the scope of the examination performance. The presentation is part of this examination.

Stage	Intermediate result	Performance to be submitted

Conception phase	Portfolio part 1	• 1-page PDF including concept presentation in written form with:
		  ○ Brief description of the envision web application, intended target user group and value to the user (1/2 Din A4 page)
		  ○ High-level architecture diagram annotated with choice of software technologies to be used for front-end and backend
		• Other relevant information into PebblePad text field (limited to ½ Din A4 page) as you see fit

		Feedback

Development phase/ reflection phase	Portfolio part 2	• A presentation of not more than 10 slides (excluding title-slide) containing:
		  ○ Title-slide including link to public GitHub repository
		  ○ One slide on the purpose of the web app
		  ○ Architecture diagram of your solution
		  ○ Overview of technology choices
		  ○ Annotated screenshots of your web application
		  ○ Changes compared to Phase 1
		  ○ 1-2min screencast showing the current state
		• Link to GitHub repository in the PebblePad text field

		Feedback
Finalization phase	Portfolio part 3	• 2-page abstract ("making of") as PDF • A text file .txt with a link to your public GitHub repository • Upload the zip-folder (including the export of GitHub repository) • Result from phase 1: 1-page PDF file as described above • Result from phase 2: Presentation as described above
		Feedback + Grade

4.2. Format for Digital File Submission

Conception phase	
Recommended tools/software for processing	Word, Powerpoint
Permitted file formats	PDF
File size	as small as possible
Further formalities and parameters	Files must always be named according to the following pattern: **For the performance-relevant submissions on "PebblePad":** Name-FirstName_MatrNo_Course_P(hase)-1_S(ubmission) Example: Mustermann-Max_12345678_ *PJWD* _P1_S

Development/reflection phase	
Recommended tools/software for processing	Powerpoint Screencast tool (e.g. screencast-o-matic) Coding platform of choice (e.g. Visual Code or similar)
Permitted file formats	PPTX or PDF (must include screencast video)
File size	100MB
Further formalities and parameters	Files must always be named according to the following pattern: **For the performance-relevant submissions on "PebblePad":** Name-FirstName_MatrNo_Course_P(hase)-2_S(ubmission) Example: Mustermann-Max_12345678_ *PJWD* _P2_S Please make sure that you either embed the screencast video inside the PPTX or PDF as you can only upload 1 file!

Finalization phase	
Recommended tools/software for processing	Word, Powerpoint Screencast tool (e.g. screencast-o-matic) Coding platform of choice (e.g. Visual Code or similar)
Permitted file formats	PDF .txt file with link to GitHub repository
File size	as small as possible
Further formalities and parameters	**IMPORTANT** is the upload of the zip folder that has been created especially for the submission (please follow the instructions on myCampus). This folder contains all the files you used to complete the task. To ensure a better overview, please create subdirectories for this purpose. **The folder structure then looks like this:** ○ Main directory (name of the zip folder) -> *Name: Name-First_Name_Matriculation_Course* *Example: Mustermann-Max_12345678_PJWD* • Subdirectory (2-page abstract) -> *Name: 01-abstract* • Subdirectory (exported GitHub Repository) -> *name: 02-GitHub* • subdirectory (this is the final video folder) ->*name: 03-final_video* Please make sure that you either embed the images (and fonts, if any) linked in your document or to place them in the respective directory. Otherwise your documents cannot be opened completely and therefore cannot be assessed! Files must always be named according to the following pattern: **For the performance-relevant submissions on "PebblePad":** Name-FirstName_MatrNo_ Course _P(hase)-3_S(ubmission) Example: Mustermann-Max_12345678_PJWD_P3_S

4.3. Format of Abstract

Length	2 pages of text
Paper size	DIN A4
Margins	Top and bottom 2cm; left 2cm; right 2cm
Font	General Text - Arial 11 pt.; Headings - 12 pt., Justify
Line Spacing	1,5
Sentences	Justified; hyphenation
Footnotes	Arial 10 pt., Justify
Paragraphs	According to mental structure - 6 pt. after line break
Affidavit	The affidavit shall be made in electronic form via "myCampus". No submission of the examination performance is possible before it. Please follow the instructions for submitting a portfolio on "myCampus".

If you have any questions regarding the submission of the portfolio, please contact the exam office via mail.

Please also note the instructions for using PebblePad & Atlas!

Good luck creating your portfolio!