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| Project Report: Cinemix Web Application Developed using *TypeScript* |  |
| Identity Guidelines |  |
|  | Concepts of Programming Languages / CMPS-445 | |
|  | Ibrahim Abou Zahr – Mohamad Abdel Rahman – Omar TakkoushDr. Bilal Nakhal |

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|  | Introduction**Cinemix** is a dynamic and modern web application developed to change the way users explore movies. Designed with simplicity and efficiency in mind, **Cinemix** offers a visually attractive interface to enhance the user’s experience. The platform uses the capabilities of **TypeScript** to ensure a robust and error-resistant code throughout the project’s development cycle.The primary purpose of this project is to provide users with a plethora of curated collection of movies, including top-rated, comedy and action films. Moreover, an ML recommender system was added to tailor movie recommendations to the user’s preferences. The web app also integrates data from an external movie API to display real-time movie information of the latest movies releasing. By leveraging React, TailwindCSS, **Typescript**, Flask and Python. | |  |
|  | In the development of **Cinemix**, **TypeScript** played a pivotal role in improving the overall developer experience by providing static typing and other advanced commodities. By integrating **TypeScript** into the development process, the group was able to enhance the app’s scalability for future expansions.  This report shows the details behind the making of **Cinemix**, highlighting key structures and features.  It also includes a comparative analysis between **TypeScript** and Java, showing the pros and cons of both programming languages. | Why Typescript? Is Typescript Frontend or Backend? - Codenteam |  |

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|  | Benefits of TypeScript in Web Development & in the making of Cinemix. | **Static Typing**, is one of TypeScript’s most significant features. Its static typing system basically checks for variable types during the compilation process, ensuring type correctness and error detection when it comes wrong type assignment.  **Advanced Features for Modern Web Development**, such features include:   * **Interfaces**: To define the shape of objects before implementing them. * **Generics**: To reuse components or functions.   **Scalability**, the type checking, interfaces and modules allow developers to break down large codebases into manageable pieces (divide & conquer).  **Community Support**, TypeScript has a vibrant and supportive community across platforms such as GitHub and StackOverflow. |  |
|  | TypeScript vs Java: A Comparative Analysis Both TypeScript and Java are popular programming languages, each with its strengths and weaknesses. While TypeScript shines in front-end and full-stack development, Java is primarily used for back-end developers and Android development.   1. **Runtime Environment:**     * Java runs on the Java Virtual Machine (JVM), making it solely independent and well optimized for server side apps.    * TypeScript is translated into JavaScript, which runs in the browser or using Node.js. Suited for front-end & full-stack web development. 2. **Learning Curve and Ecosystem:**     * Java’s syntax can be quite tedious for beginners and can feel very overwhelming. Takes time to get used to as it has a steep learning curve.    * TypeScript’s syntax is simpler making it easier for new developers to adopt to. It includes popular frameworks like React and Angular. 3. **Object Oriented Programming (OOP):**    * Java is a fully object oriented language, supporting features like polymorphism, inheritance and many more OOP concepts.    * TypeScript supports OOP concepts but is more flexible since it mixes them with procedural paradigms. Features such as interfaces and classes are always used in scalable projects. 4. **Cinemix Use Case:**     * Why not Java? While a powerful back-end language, it is not designed for building interactive front-end models. Therefore, it does not offer the seamless experience as TypeScript does.   Oracle Java Technologies | Oracle Examples of Mentioned TypeScript Concepts: **Interfaces**:    **Functions:**    **Importing Other Pages:**    **State variables:** | |  |

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| Conclusion; Cinemix benefits greatly from using TypeScript which enhances reliability and scalability. TypeScript’s static typing, **advanced features and constant community support makes it the go-to option between programming languages to build your ideal web application.** |
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