**OOP1 Assignment (25%)**

The purpose of this assignment is to demonstrate your ability to apply the learning from the module to build a Java application demonstrating features from the latest Java LTS (Java 21). The application is expected to cover the following language features from the module:

**Fundamentals**:

* classes
  + contrast *this()* and *this.*
  + method overloading
  + varargs
  + LVTI
* encapsulation
* interfaces
* inheritance
  + overriding and polymorphism
  + contrast *super()* and *super.*
* exceptions (checked and unchecked)
* enums
* arrays
* use of Java Core API (*String*, *StringBuilder*, *List/ArrayList*, Date API)

**Advanced:**

* call-by-value and defensive copying
* *private, default and static* interface methods
* records
* a custom immutable type
* lambdas (*Predicate*)
  + discussion of ‘*final*’ or ‘effectively final’
  + method references
* *switch* expressions and pattern matching
* sealed classes and interfaces

**Extra marks:**

* any topics from Java 22 and/or 23 - be sure to clearly explain these topics and what you had to do to get the newer code to compile/run
* consistent updates to a public repository

**Application Domain**

You are free to select your own domain. Please select a domain that makes sense e.g. a car park/restaurant application.

**Deadline**

1700 Friday 29th November (end week 12). If you cannot submit on that date due to illness or other extenuating circumstances, you will have to request a deferral by emailing [eng@tus.ie](mailto:eng@tus.ie). A live Q&A via zoom may be scheduled after the submission date if seemed necessary - you will be notified by student email if this is the case. The zip to upload should contain your report, code and screencast.

**What to submit**

|  |  |
| --- | --- |
| Report | A brief introduction to the application. |
| List of user stories completed. |
| Evaluation - evaluation (1-2 pages) of how well you adhered to the project brief and any problems encountered. |
| Code | Your source code |
| Video screencast | Brief overview of your architecture (UML diagram) |
| Demo of all your user stories |
| Max. time is 10 mins |
| Ensure you annotate your video accordingly; the better explained it is, the easier it is to give marks. |
| Audio quality is very important. |

**Marking rubric**

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| --- | --- | --- | --- | --- |
| Elements | Excellent (75+) | Good (55%-75%) | Satisfactory  (40%-55%) | Fail (0-39%) |
| Presentation quality  (20%) | Excellent audio.  Presentation demonstrates adequate preparation. Content is presented in a coherent and logical fashion. Appropriate use of visual annotations. | Good audio.  Presentation demonstrates adequate preparation. Content is presented in a coherent and logical fashion. | Good audio.  Presentation demonstrates adequate preparation. | Poor audio.  Presenter does not adhere to the maximum time limit. |
| Application demo (user stories/requirements)  (60%) | Presenter demonstrated a complete application (both fundamentals and advanced language features).  Excellent understanding of the application and language features used. | Presenter demonstrated a more complete application (not all language features implemented).  Good understanding of the application and language features used. | Presenter demonstrated an application with a good level of functionality (all fundamental language features implemented).  Good understanding of the application and language features used. | Presenter demonstrated minimal or no functionality at all. Very few fundamental language features implemented.  Weak understanding of the application and language features used. |
| Code quality (10%) | Code is of a very high standard and is very easy to follow. | Code is of a high standard and easy to follow. | Code is of a good standard and relatively straightforward. | Code is of a low standard and hard to follow. |
| Evaluation (10%) | Application evaluated against the project brief.  Java 22/23 used.  Consistent repo updates. | Application evaluated against the project brief. | Minimal or no evaluation. | No evaluation done. |