NORTHERN ARIZONA UNIVERSITY
College of Engineering, Forestry & Natural Sciences

SCHOOL OF INFORMATICS, COMPUTING, AND CYBER SYSTEMS
CS 386 – Software Engineering
Prof. Marco Gerosa

Team Project – D.4 Design

Deadline: Friday, April 13 11:59 pm

Grading: 3 points

This deliverable should describe the internal design of your system. Structure your deliverable using the following sections. See the "Team Project Instructions" for details about formatting. Check the lecture materials and perform additional research to produce a high-quality deliverable.

1. **Description**
   Provide 1-2 paragraphs to describe your system. This will help understand the context of your design decisions.

2. **Architecture**
   Present a diagram of the high-level architecture of your system. Use a UML package diagram to describe the main modules and how they interrelate. See some examples at:
   https://www.uml-diagrams.org/index-examples.html
   Make clear the layers of your architecture (if they exist) as described in:
   https://www.uml-diagrams.org/multi-layered-application-uml-model-diagram-example.html
   Provide a brief rationale of your architecture explaining why you designed it that way.

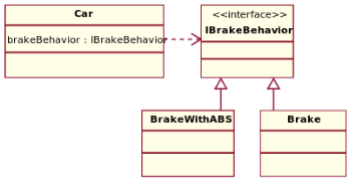
3. **Class diagram**
   Present a refined class diagram of your system, including implementation details such as visibilities, attributes to represent associations, attribute types, return types, parameters, etc. The class diagram should match the code you've produced so far, but not be limited to it (e.g. it can contain classes not implemented yet).

4. **Sequence diagram**
   Present a sequence diagram that represents how the objects in your system interact for a specific use case. Also include the use case description in this section. The sequence diagram helps to understand the dynamic aspect of your design.

5. **Design Patterns**
   Split this section into 3 subsections. For each subsection, present a UML class diagrams showing the application of a design pattern to your system (a different pattern for each section). Each class diagram should show only the classes involved in the specific pattern (you don't need to represent the whole system). Choose patterns from at least two of these categories: Behavioral, Structural, and Creational. You are not limited to design patterns

studied in class. Maybe your system is not appropriate for any design pattern. In this case, for didactic purpose, be creative and extend a little bit the scope of your system to make 3 design patterns appropriate.

Implement each of the design pattern in your system and provide GitHub links to the corresponding classes. Example:



Car: https://github.com/user/repo/blob/master/src/com/proj/main/Car.java
IBreakBehavior: https://github.com/user/repo/blob/master/src/com/proj/main/IBreakBehavior.java
BrakeWithABS: https://github.com/user/repo/blob/master/src/com/proj/main/BrakeWithABS.java
Brake: https://github.com/user/repo/blob/master/src/com/proj/main/Brake.java

6. **Design Principles**
   How does your design observe the SOLID principles? Provide a short description of followed principles giving concrete examples from your classes.

7. **Group participation**
   Provide this section as described in the "Team Project Instructions."

Feedback: If you have any suggestions about this document or the course, please send them via this online form: https://goo.gl/forms/peCmYZ0fXiIgzwS12