2021–2022 SPRING SEMESTER

CS319 – DESIGN PATTERNS REPORT

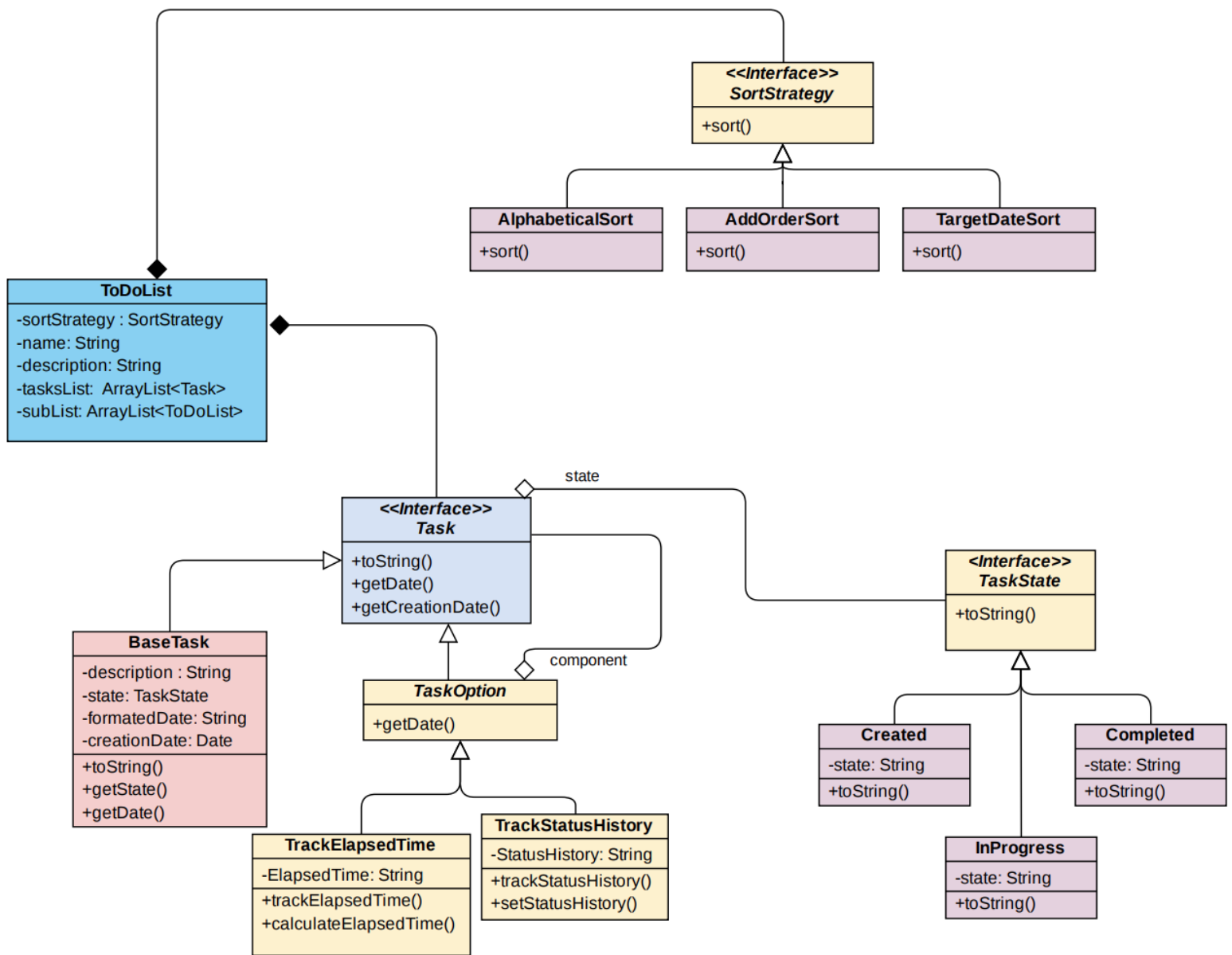## DESIGN PATTERNS

NAME: ABDULLAH RIAZ

ID: 22001296

COURSE: CS319 OBJECT-ORIENTED SOFTWARE ENGINEERING

SECTION: 01

DATE: 26/04/2022

In implementing the program and the corresponding UML diagrams, I have used 3
Design Patterns in total. For the implementation of Task Status, I used a State
design pattern. As the name of the pattern suggests, this design pattern is relatively
easy to use in terms of handling states, and the statuses of tasks are more or less a
type of state. I had a TaskState interface made with three concrete states, Created,
Completed and InProgress. The second design pattern I used was the Decorator
pattern to implement additional options in tasks such as TrackElapsedTime and
TrackStatusHisory. The Decorator uses wrappers to reuse already made
objects(Base Task in this case) and transform them to have additional methods and

properties. (In this case, a base task can be transformed into a task with status history or elapsed time or both even). The third and final design pattern used was the Strategy pattern to handle the sorting of tasks. Strategy pattern allows me to have different algorithms to apply to objects without making the object unusable for other algorithms. In this case, I used it to make three sorting algorithms, Add order, alphabetical order and target order.