

# group-project

## Sprint 2 Guides

These guides support Sprint 2. Read them as you work through the requirements.

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### Design Patterns

Guide	When to Read
<a href="#">Introduction to Design Patterns</a>	Before starting – understand what design patterns are and why they matter
<a href="#">The Observer Pattern</a>	Requirements 3, 6, 7 – <code>PropertyChangeListener</code> , <code>PropertyChangeSupport</code> , and event-driven updates
<a href="#">Model-View-Controller (MVC)</a>	Requirements 2–7 – understand the architecture you're building: Model ( <code>TetrisGame</code> ), View (panels), Controller (key/menu handlers)
<a href="#">The Strategy Pattern</a>	Supplementary – understand the Map-based strategy pattern used in the back-end API

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### GUI & Events

Guide	When to Read
<a href="#">Handling Key Events</a>	Requirement 5 – <code>KeyListener</code> , <code>KeyAdapter</code> , and three patterns for mapping keys to actions
<a href="#">Animation with <code>javax.swing.Timer</code></a>	Requirement 2 – setting up the game timer, start/stop, and why <code>Timer</code> runs on the EDT
<a href="#">Adding Event Handlers</a>	Review – <code>ActionListener</code> patterns for menu items and timer callbacks

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## References

### Primary Texts:

- Gamma, E., Helm, R., Johnson, R., & Vlissides, J. (1994). *Design Patterns: Elements of Reusable Object-Oriented Software*. Addison-Wesley. — Observer pattern (pp. 293–303), Strategy pattern (pp. 315–323), MVC introduction (pp. 4–6).
- Freeman, E., & Robson, E. (2020). *Head First Design Patterns* (2nd ed.). O'Reilly. — Chapter 2: Observer Pattern, Chapter 12: MVC compound pattern.
- Horstmann, C. S. (2022). *Core Java, Volume I: Fundamentals* (12th ed.). Oracle Press. — Swing event handling, Timer, PropertyChangeListener.
- Bloch, J. (2018). *Effective Java* (3rd ed.). Addison-Wesley. — Item 42: Prefer lambdas to anonymous classes; Item 43: Prefer method references to lambdas.

### Language Documentation:

- [Oracle JDK 25: PropertyChangeListener](#) — Observer interface for property changes
- [Oracle JDK 25: PropertyChangeSupport](#) — Helper class for managing observers
- [Oracle JDK 25: javax.swing.Timer](#) — EDT-safe timer for periodic events
- [Oracle JDK 25: KeyListener](#) — Keyboard event interface
- [Oracle JDK 25: KeyAdapter](#) — Convenience adapter for KeyListener

### Tutorials:

- [Oracle: How to Write a Key Listener](#) — Official Swing key event tutorial
- [Oracle: How to Use Swing Timers](#) — Official Swing Timer tutorial
- [Tetris Back-End API Documentation](#) — Game model Javadoc