

Activities

- Lessons
- Problems
- Projects
- All activities done and skills built in a TypeScript, Tailwind, and Next.js stack
- All activities use patterns or skills very helpful in industry except for ML activities which are specific to ML engineer roles or building AI products

Most common software engineering skills

- Tracing
- Stepwise refinement
- DSA
- React FCs skill + FP skill + Interactive UI skill + Static typing skill
(more efficient to train together)
- UI design
- Figma to code
- OOP
- SQL

Lessons

- Activities without the word "problems" or "project" are lessons
- Certain lessons are required for other lessons, problems, and projects

- Lessons build understanding of patterns which can easily be reviewed later if weakened from disuse

Problems

- Problems build skills and are done on the student's own time
- Certain skills are required for lessons, problems, and projects
- Problems can be repeated to restore skills weakened from disuse
- Skills implicitly use and build their prerequisite skills
- All skills are based on understanding patterns + pattern matching with those patterns--not pattern matching with specific problems

Projects

- Projects are also done on the student's own time but are brief, optional, and not required for any activity
- Students choose to do projects if they want more confidence in skills or intrinsic motivation for building skills
- Projects build confidence in the skill by proving to the student that they can easily apply the skill to create a small app
- Equally important, the student chooses the exact project based on interest to build intrinsic motivation to learn the required skill

Completed activities

- Tailwind
- Diagnostic exercises

Lower-level activities

- All lower-level activities skipped due to excellent performance in diagnostic exercises
- Tracing
- Tracing problems **requires** Tracing
 builds Tracing skill
- Stepwise refinement **requires** Tracing + Algebra I word problems skill
- Stepwise refinement problems **requires** Stepwise refinement + Tracing skill
 builds Stepwise refinement skill
- Stepwise refinement project **requires** Stepwise refinement skill
- OOP **requires** Stepwise refinement
- OOP problems **requires** OOP + Stepwise refinement skill
 builds OOP skill
- OOP project **requires** OOP skill

Next activities

- Just the recommended order--tailor to your goals and interests as long as requirements are met
- Use links to existing high-quality resources for lessons and problems instead when available
- Async coding and API calls **requires** OOP + Tracing skill
- React class components **requires** Async coding and API calls
- FP **requires** OOP + Tracing skill
- React FCs **requires** React class components + FP

▪ Debugger and logger	requires OOP + Tracing skill
▪ React FCs problems	requires React FCs + Stepwise refinement skill
▪ Testing framework	builds React FCs skill + FP skill + Interactive UI skill + Static typing skill requires Tracing skill
▪ React FCs project	requires React FCs skill
▪ Git and issue tracker	
▪ CI/CD	requires Tracing skill + Git and issue tracker
▪ API endpoints	requires Async coding and API calls
▪ DSA	requires OOP + Stepwise refinement skill covered by https://algo.monster
▪ NoSQL databases	requires Async coding and API calls
▪ SQL	requires Async coding and API calls
▪ SQL problems	requires SQL builds SQL skill
▪ SQL project	requires SQL skill
▪ Authentication	requires API endpoints + (NoSQL databases OR SQL)
▪ UI design	
▪ UI design problems	requires UI design builds UI design skill
▪ UI design project	requires UI design skill
▪ Design system to code	requires React FCs + Tailwind

- Figma to UI library **requires** Design system to code
- Figma to code **requires** Figma to UI library
- Figma-to-code problems **requires** Figma to code
builds Figma-to-code skill
- Figma-to-code project **requires** Figma-to-code skill
- UI library integration **requires** Figma to code
- Data visualization and processing **requires** FP
- ML **requires** Data visualization and processing
- ML problems **requires** ML
builds ML skill
- ML project **requires** ML skill