



TYPESCRIPT

TYPES . INTERFACES . GENERIC
NARROWING . UTILITY TYPE
REACT . CONFIG . MIGRATION

DURATION

35 Hours

LEVEL

Intermediate

MODULES

8

MODE

**Classroom ·
Online · Hybrid**

01 COURSE OVERVIEW

A TypeScript course on typing real applications, including React and Node projects. The course teaches the type system as a design tool: modelling domains with unions and discriminated types, narrowing, generics and utility types, then applying it to React components, API boundaries and gradual migration of JavaScript code.

Learners migrate a JavaScript project to TypeScript and type an API client end to end.

WHO IT IS FOR

JavaScript developers

React and Node developers

Teams adopting TypeScript

Full stack engineers

PREREQUISITES

Solid JavaScript knowledge.

02 LEARNING OUTCOMES

01 Annotate values, functions and objects precisely.

03 Narrow types safely with guards and predicates.

05 Apply utility and mapped types.

07 Configure tsconfig and integrate with build tools.

02 Model domains with unions and discriminated types.

04 Write reusable generics and constraints.

06 Type React props, hooks and events.

08 Migrate a JavaScript codebase incrementally.

01 TYPE BASICS

Primitives

Objects

any, unknown, never

Arrays and tuples

Functions

Type inference

LAB

TYPING EXERCISES

02 INTERFACES AND TYPES

Type aliases vs interfaces

Index signatures

Declaration merging

Optional and readonly

Extending

03 UNIONS AND NARROWING

Union and intersection

Discriminated unions

Assertion functions

Literal types

Type guards

Exhaustiveness

LAB

STATE MACHINE TYPES

04 GENERICS

Generic functions and classes

Default type parameters

Conditional types basics

Constraints

Inference

LAB

GENERIC UTILITIES

05 UTILITY AND MAPPED TYPES

Partial, Pick, Omit, Record

Template literal types

satisfies

Mapped types

keyof and typeof

06 TYPESCRIPT WITH REACT

Props and children

Events

Context

Hooks typing

Refs

Generic components

LAB

TYPED COMPONENT SET

07 CONFIGURATION AND TOOLING

tsconfig options

Path aliases

Third-party types

Strict mode

Declaration files

ESLint integration

08 MIGRATION AND API BOUNDARIES

Incremental migration

JSDoc types

Typing API responses

allowJs

Runtime validation with zod

PROJECT

JAVASCRIPT TO TYPESCRIPT MIGRATION

04 ASSESSMENT & CERTIFICATION

Module assignments and labs

25%

Mini projects

20%

Internal assessments

15%

Final project and review

40%

CERTIFICATION

Learners who complete all modules, submit the final project and clear the review receive a course completion certificate from Kaizen Infinities Private Limited. Project work is documented for the learner's portfolio, and interview preparation is included in the closing sessions.

05 CAREER OUTCOMES

ROLES THIS PROGRAMME PREPARES FOR

TYPESCRIPT DEVELOPER

FRONT-END ENGINEER

FULL STACK DEVELOPER

REACT DEVELOPER

NODE.JS DEVELOPER

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