Building Production Software

The Complete Software Development Lifecycle

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Team Introductions



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The Development Cycle in School





The Development Cycle for Production Software





Building a Client Relationship



Why is building a client relationship important?



How do I build a client relationship?

Communicate effectively

Practice active listening and ask thoughtful questions, making clients feel engaged



Build personal connections

Be transparent and accountable, and develop rapport by showing genuine interest in clients as coworkers and people



Deliver excellent work

Consistently meet or exceed expectations, even on the micro (story) level. This is where you can provide the most value as an entry-level consultant! Collecting Requirements



Requirement Collection Overview

Why collect clear requirements?



What is requirement collection?

The process by which the business specifies what the software team should build

AND

FUNCTIONAL

WHAT should the application do?

NON FUNCTIONAL

HOW should the application perform its task?

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How do we Collect Requirements?





Acting As An Interpreter

You must be able to speak the language of the business, while getting the information that the engineering teams needs



Connecting The Dots

The business usually thinks of terms of use-cases. You need to connect the dots to create a detailed specification for creating software



Implicit Requirements

The business can't enumerate every requirement. The engineering team must be able to make informed assumptions

Design and Planning



Why Design and Plan?



Long-Term Confidence

Building software is time-consuming. You want to minimize the chance that you'll need to redo some part of it again



Record of Decisions

A good design process will create documentation for why decisions were made, which can be referenced in the future

How do we Design and Plan?



Client Example: Flight Refunds

Search Results / Ticket Deta Ticket Details	Is		(8) E183320	
Ticket No: 526520364191	Issue Date: Jul 30, 2024 Ticket Exp: Jul 30, 2025	Exchanged To: <u>5262520552740</u> Exchanged From: <u>5262520528762</u> Original:	Customer No:	As a Customer Service Rep, I want an
Booking Details PNR: 7A1246 Purchaser: Endorsements:	Res System: Channel Type:	Tour Code:	Related Reservation Relation: PNR: Res System:	"Expand All" button, so that I can quickly view or hide all details on the page
ltinerary	● FLT Time ■ FLT Date 36:50 Aug 13, 2021 12:30 Aug 13, 2021	Status Updated Date OK Aug 16, 2021 CANCELLED Aug 16, 2021	Expand All V	Solutions
Fare Calc Line Associated EMDs			~	Implementation: Use an "expanded" state variable to control child components

Design Activity

- Purpose of this activity is to mimic a client interaction
- What questions do you need to ask to accurately gather requirements?
- How do you split up the problem into technical chunks?





- Please split into teams of 3-5
- Presenters will be available for questions and help
- Don't be afraid to whiteboard



🝃 BookStack



Gathering Requirements



Design and Planning

- Example Requirement: As a customer when I type in "1984" to the search bar then I should see a webpage only showing the book "1984".
- Possible Questions:
 - What algorithm should I use?
 - How do I visually show the search bar?
 - How are errors processed?
- Stories should be 1-2 sentences explaining the technical implementation of your requirements



Proposed Stories

- Story 1: Create a text bar with a search icon in the top right corner of the page
- Story 2: Implement exact search to get book details from the backend.
- Story 3: Setup webpage view for viewing searched books.
- Story 4: Research and implement an approximate search algorithm.
- Story 5: Implement filter option for book author which has exact match and approximate match



Development and Implementation



Deploying to Production



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Overview: Deployments



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Real Life Visuals of Deployments



 Warning 3 00:02:52 3 2 days ago 	#12443408 to 10 ~ 76121846 ∰ latest merge request	000000
 Warning ◊ 00:02:56 □ 2 days ago 	#12442068 № 10 ~ 9744d47d ∰ merge request	000000
 Warning 00:03:12 2 days ago 	#12438679 \$ 10 ~ 01fbed43 ∰ (merge request)	000000

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Client Example: Leading Airline is Deploying a New Voucher System to iPads and the Cloud



Monitoring in Production



Observability and Alerting

Observability

The ability to understand the internal operation of the system, while its running in production

Alerting



Sending notifications when unexpected events occur within the system

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Application Health

Logs describing the how the code is operating, including errors

Example: Alerts when errors occur for customers at checkout



Infrastructure Health

Metrics about the platform that the code is operating on, including CPU, memory, and network usage

Example: Monitoring memory usage to identify memory leaks

Knowledge Transfer



Why and when would we need to knowledge transfer?

The best time to transfer knowledge is continuously, while the project is ongoing! But that's not always the reality...

"ROLLING OFF"

Ensures continuity and quality

Properly transferring knowledge to clients ensures that quality of current and future code will be maintained due to continuity of knowledge

Further solidifies client satisfaction and trust

Upskilling clients with the tools and information that they need to continue and improve upon a project is a huge value add

Reduces gap risk

A successful roll-off lessens the gap between our knowledge of the project and the clients' knowledge of our work

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Best practices for Knowledge Transfer

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Before you roll off...

While your project is in flight, you should:

- **C**onduct demos and reviews with your client
- Update documentations to cover latest changes
- Continuously train client counterparts on new features or technologies that you implemented

When you are rolling off...

During your dedicated roll-off time, you should:

- Develop a knowledge transfer plan with your client
- Thoroughly review documentation that has already been created
- Provide hands-on support as client counterparts ramp up

Conclusion



The Development Cycle for Production Software





Questions?



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