

## Lecture Summary: Introduction to Software Engineering

### What is Software?

- Program: Simple code made by one person to do a task.

- دحاو صخش هبتك ي طيسب دوك :جمانرب -

- Software: A big system with many components (design, testing, maintenance).

- ماضن ري بك :تايجمربلا

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لماك قيرف جاتحم د

### Types of Software:

- Generic: Sold to many users (e.g., MS Word).

- ليمع نم رتكال عابتي ب :ماع -

- Bespoke: Custom-made for one client.

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طقف دحاو ليمعل لومعم :صصخ

### Software Categories:

- Web, smartphone apps, system software, embedded systems, databases, graphics, real-time control, etc.

- ةجمدم ةزهجأ ، تاموسر ، يطحل مكحت ، ليغشت ةمظنا ، تانايب دعاوق ، تاقيبطت :ةلثمأ -

## What is Software Engineering?

- The science of building large software systems in a cost-effective, organized way.
- ةي داصتقاو ةيجهنم ةقيرطب ةريبك تايجمرب ءانب ملع

## Who's Involved?

- Client: Pays and expects the product.
- جتننملا زياغو عفديب :لعملا
- Customer: Approves or buys the product.
- جتننملا راتخي وأ يرتشي :نوبزلا
- User: Uses the software.
- جمانربلا سلع لغتشي ي ليل :مدختسملا لعف
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## What Makes Good Software?

- Functionality, Usability, Maintainability, Efficiency, Dependability
- ةقوثوملا - ءافكلا - ةنايصللا - مادختساللا ةلوهس - فئاظوللا :حتافم سمخللا

## Three-Way Trade-Off:

- Functionality: More features = more cost & time
- Cost: Cheaper = fewer features or more time
- Time: Faster = more cost or less features
- فئاظوللا ، ءفلكتلا ، تقولا :نوب نزوت مزال

## Why Projects Fail?

- Functionality problems, Misunderstood requirements, Inadequate testing
- Schedule delays, Cost overruns, Resource misallocation
- طالع فرص، بوسحم ريغ عيسوت، ئطاخ مهف، عاطخأ، ريخأت: لشفالبابسأ

Success = Client Satisfaction:

- Even with perfect code, if the client isn't happy — the project is a failure.
- لي مغل اضر = يقي قحل حاجنل

Main Challenges in Software Engineering:

1. Heterogeneity - توافقال

- Different environments → software must work everywhere.

2. Delivery - ميسلستل

- Fast delivery vs. high quality.

3. Trust - ثقةال

- Users must trust software for privacy, correctness, and security.

Final Takeaway:

- Software engineering = people + process + quality + trust
- ةلماك ةموظنم يد، دوك درجم شم -