



LECTURE 4

Software Engineering Concepts

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Development / Coding

LAYING THE BRICKS...



Programming in the Small vs. Programming in Large

AS DISCUSSED BEFORE...

Development

- ▶ Divide the task at hand according to plan.
- ▶ Assign the Task at hand according to plan.
- ▶ Develop the task at hand according to plan.
- ▶ Finish the development according to the plan.

No Surprises...

- ▶ Pre defined rules, pre defined Syntax, Pre defined building blocks, Pre defined flow...
- ▶ Almost everything is static and repetitive.
- ▶ Follow the Elders and there will be no surprises.

Testing

MAKING IT WORK...

Software Testing

- ▶ The process of evaluation a software item to detect differences between given input and expected output.
- ▶ A verification and validation process.

Verification

- ▶ The process to make sure the product satisfies the conditions imposed at the start of the development phase.
- ▶ In other words, to make sure the product behaves the way we want it to.

Validation

- ▶ The process to make sure the product satisfies the specified requirements at the end of the development phase.
- ▶ In other words, to make sure the product is built as per customer requirements.
- ▶ Kjikh fdgdfh

Basics of software testing

Blackbox Testing

- ▶ A testing technique that ignores the internal mechanism of the system and focuses on the output generated against any input and execution of the system.
- ▶ Also called functional testing.

Whitebox Testing

- ▶ A testing technique that takes into account the internal mechanism of a system.
- ▶ Also called structural testing and glass box testing.

Types of testing

- I. Unit Testing
- II. Integration Testing
- III. Functional Testing
- IV. System Testing
- V. Stress Testing
- VI. Performance Testing
- VII. Usability Testing
- VIII. Acceptance Testing
- IX. Regression Testing
- X. Beta Testing

Deployment

GIVE IT TO ME...

Software Deployment

- ▶ All of the activities that make a software system available for use.
- ▶ The general deployment process consists of several interrelated activities with possible transitions between them.
- ▶ These activities can occur at the producer side or at the consumer side or both.
- ▶ Because every software system is unique, the precise processes or procedures within each activity can hardly be defined.

Deployment Activities

- ▶ Release
- ▶ Installation and activation
- ▶ Deactivation
- ▶ Uninstallation
- ▶ Update
- ▶ Built-in update
- ▶ Version tracking

Types of Deployment

1. Direct Deployment
2. Parallel Deployment
3. Phased Deployment
4. Pilot Deployment
5. User Training

Direct Deployment

- ▶ The System is deployed in one go.
 - ▶ Out with old in with the new.
 - ▶ Users start using the New System and stop using the Old one altogether.
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- ▶ Search for examples on the Interwebs...

Parallel Deployment

- ▶ New System in Deployed alongside the old.
 - ▶ Both systems are functional and working at the same time.
 - ▶ Both systems work side by side until it is clear that the new system is reliable and /or accepted by the users.
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- ▶ Search for examples on the Interwebs...

Phased Deployment

- ▶ Parts are delivered and replaced from time to time.
 - ▶ New System is delivered in parts and those parts are deployed one by one.
 - ▶ Old system is replaced in installments.
 - ▶ Takes a pre planned amount of time to shift to the new system completely.
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- ▶ Search for examples on the Interwebs...

Pilot Deployment

- ▶ New system Deployed as whole, but in selected locations.
 - ▶ System is deployed completely, but to selected groups of users only.
 - ▶ Feedback is gained, training sessions are conducted, reliability is verified and then system is revealed to everyone.
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- ▶ Search for examples on the Interwebs...

User Training

- ▶ This involves the users of the system from the beginning of the SDLC.
 - ▶ This makes sure they start training from the beginning of the system and are familiar with every nook and cranny of it.
 - ▶ Trainings may be conducted In-House or Contracted-Out to a third party.
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- ▶ Search for examples on the Interwebs...



Maintenance

KEEP IT GOING...

Maintenance

IT STANDS FOR ALL THE MODIFICATIONS AND UPDATES DONE AFTER THE DELIVERY OF SOFTWARE PRODUCT.

Reasons for Maintenance

- ▶ Market Conditions
- ▶ Client Requirements
- ▶ Host Modifications
- ▶ Organization Changes

Types of Maintenance

- ▶ Corrective Maintenance
- ▶ Adaptive Maintenance
- ▶ Perfective Maintenance
- ▶ Preventive Maintenance

Evolution

SURVIVAL OF THE FITTEST...

Questions???