Agile Process (Extreme Programming)

Agile process

- Agility is an effective response to change.
- Change in software, changes to team member, changes in technology, etc.
- It is a process that emphasizes rapid delivery of operational software and de-emphasizes the importance of intermediate work products.
- Work Product: operational software increment on appropriate commitment date.

Agile process

- Any agile software process addresses four key assumptions:

1. It is difficult to predict in advance about the change in requirements.
2. It is difficult to predict in advance about the change in customer priorities.
3. It is difficult to predict how much design is necessary before construction is used to prove design.
4. Analysis, design, construction and testing are not even predictable from planning point of view.

Agile Process

- Agile process are characterized by considerably less emphasis on analysis and design as compared to other life cycle models
- Implementation starts much earlier.
- Responsiveness to changes in requirements is another major of agile process.
- And also collaborating with client.

Agile Processes and Models

- One of the principles of agile s/w development is to deliver working software quickly, ideally every 2 to 3 weeks.
- This is achieved by **time boxing (a time management technique)**
- i.e. completing a given task in a fixed time (2-3 weeks)
- Agile processes demands fixed time, not fixed features.

Agile Processes and Models

- Another technique is to have **stand-up meetings**
- Short meetings at regular time each day.
- Not generally more than 15 mins
- All team members must attend meeting.
- All participants stand in a circle.

- Each team member must answer five questions:
  - what I have done since yesterday's meeting?
  - what am I working on today?
  - what problems are preventing me from achieving this
  - what have we forgotten?
  - what did I learn that can be shared with team?

- The aim of stand-up meeting is to raise problems, not solve them, solutions are found at follow –up meetings.

Agile Process and Models

- Extreme Programming (XP) is one of a no. of new paradigms that are collectively referred to as **agile processes.**
- Others are
  - Scrum,
  - ASD,
  - DSDM,
  - Crystal
  - FDD.

Extreme programming

- New approach to software development based on iterative and incremental model
- Steps are:
- Software development team determines the various **features(stories)** the client would like to support.
- For each feature, team informs client of time and cost.
- Above step is similar to requirement and analysis work flow of iterative and incremental model

Steps

- Client selects the features to be included in each successive build using cost-benefit analysis.
- Proposed build is divided into smaller pieces called tasks.
- A programmer first draws up test cases for a task; this is known as TDD
- Two programmers can work together on one computer(**pair programming**) implementing the task and ensuring that all the test cases work correctly.

Steps

- Two programmers alternate typing every 15 to 20 mins.
- Programmer who is not typing carefully checks the code.
- Task is then integrated into the current version of the product.
- Pair programming is done in parallel.
- TDD test cases are retained and utilized in further integration testing

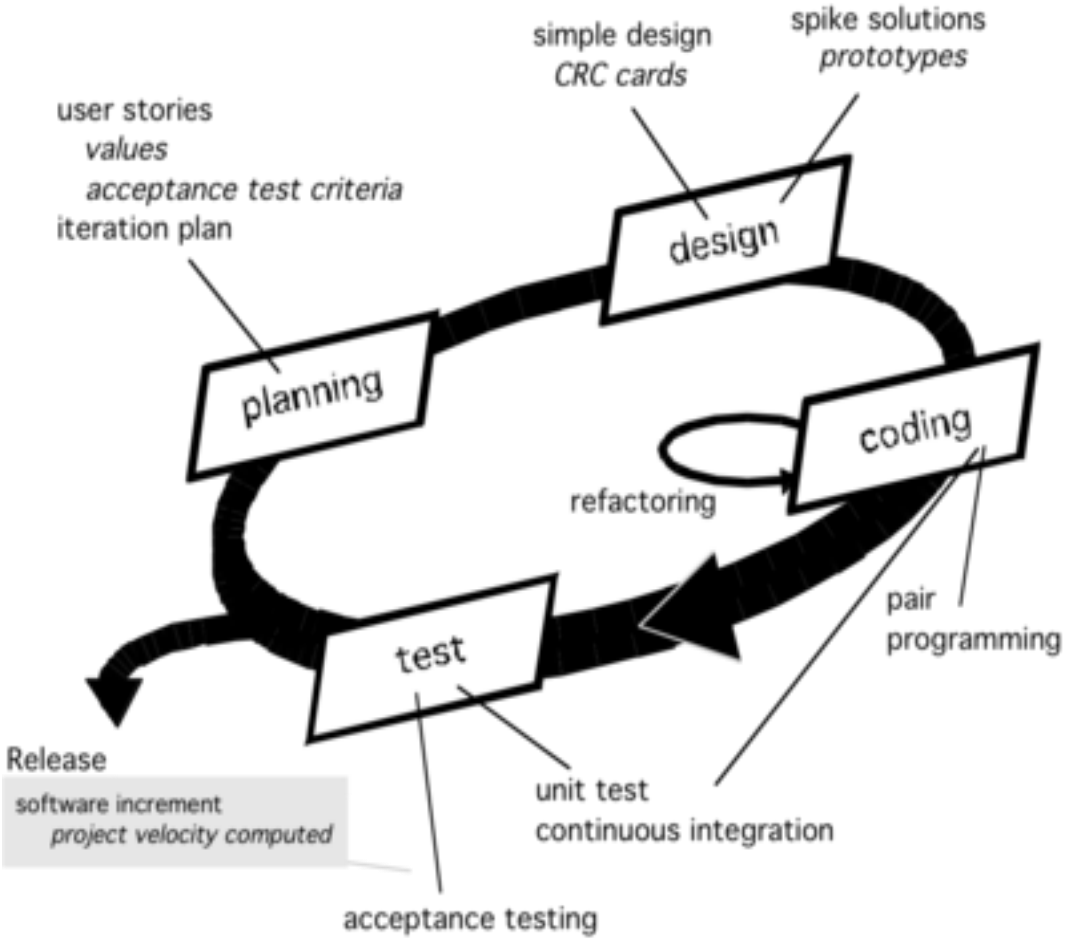
Features of XP

- Computers of XP team are set up in the center of a large room lined with small cubicles
- A client representative works with XP team at all times.
- No individual can work overtime for two successive weeks.
- There is no specialization.
- There is no overall design step before the various builds are constructed. Instead **Refactoring** is used.

Features of XP

- Two acronyms are used:
- **YAGNI (“you are not gonna need it”)**
- **DTSTTCPW (do the simplest thing that could possibly work)**
- In other words, a principle of XP is to minimize the no. of features; there is no need to build a product that does any more than what the client actually needs

XP Process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CRC cards
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acceptance test criteria
iteration plan
design
planning
coding
refactoring
pair
programming
test
Release
software increment
project velocity computed
unit test
continuous integration
acceptance testing

Agile Processes –Advantages

- Generally used for small scale projects, where customers requirements are vague.
- Results in reduction in the cost of post-delivery maintenance
- Refactoring- a major component of agile process
- Pair programming leads to a development of higher-quality code in short time

University Questions

- What is an Agile process? Explain any one Agile process model with its advantages and disadvantages? [Dec 2010]
- What are the advantages of Agile methodology? [May 2010]
- List various Agile Process models and explain any one in detail.

- END OF TOPIC

- NEXT TOPIC – PROJECT MANAGEMENT (4 P'S)