IN5140

Smart processes and agile methods in Software Engineering

Group session 4

Agenda

First hour:

- Weekly exercises?
- Working on Delivery 1

Second hour:

- Working on Delivery 1

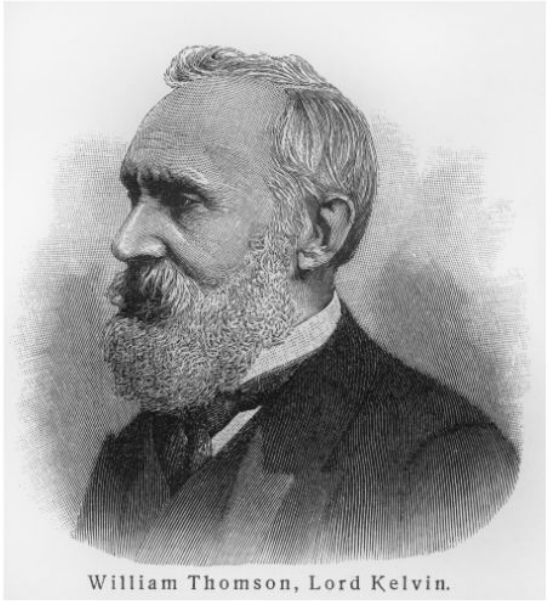
Weekly exercises 4

1. Select three variables (measures) that you may use in your project to measure aspects of the development process or system being developed.

To measure is to know.
If you cannot measure it, you cannot improve it.
Lord Kelvin

Not everything that counts can be measured.
Not everything that can be measured counts.
Albert Einstein

In God we trust, all others bring data –
W. Edwards Deming


William Thomson, Lord Kelvin.

2. For each of the variables specified in task 1, describe whether the variable:

- can be measured directly or only indirectly
- is objective or subjective
- is quantitative or qualitative
- is measured at the nominal, ordinal, interval or ratio scale

Directly or indirectly measurement

- Directly: Measuring that exact variable.

- Indirectly: Measuring the variable through measuring something else.

Objective or subjective

- Objective:
  - Based on facts rather than feelings, opinions, prejudices or interpretations [Merriam-Webster].

- Subjective:
  - Related to the way people experience things in their own mind
  - Based on feelings or opinions rather than facts, modified or affected by personal views, experience or background [Merriam-Webster]

Quantitative or qualitative

- Quantitative:
  - Data expresses quantity
  - Data expressed as numbers
  - Used in statistics

- Qualitative:
  - Data expresses quality in some sense
  - Data expressed as text, images, audio or video but not numbers
  - Not used in statistics

Nominal, ordinal, interval or ratio scale measurement

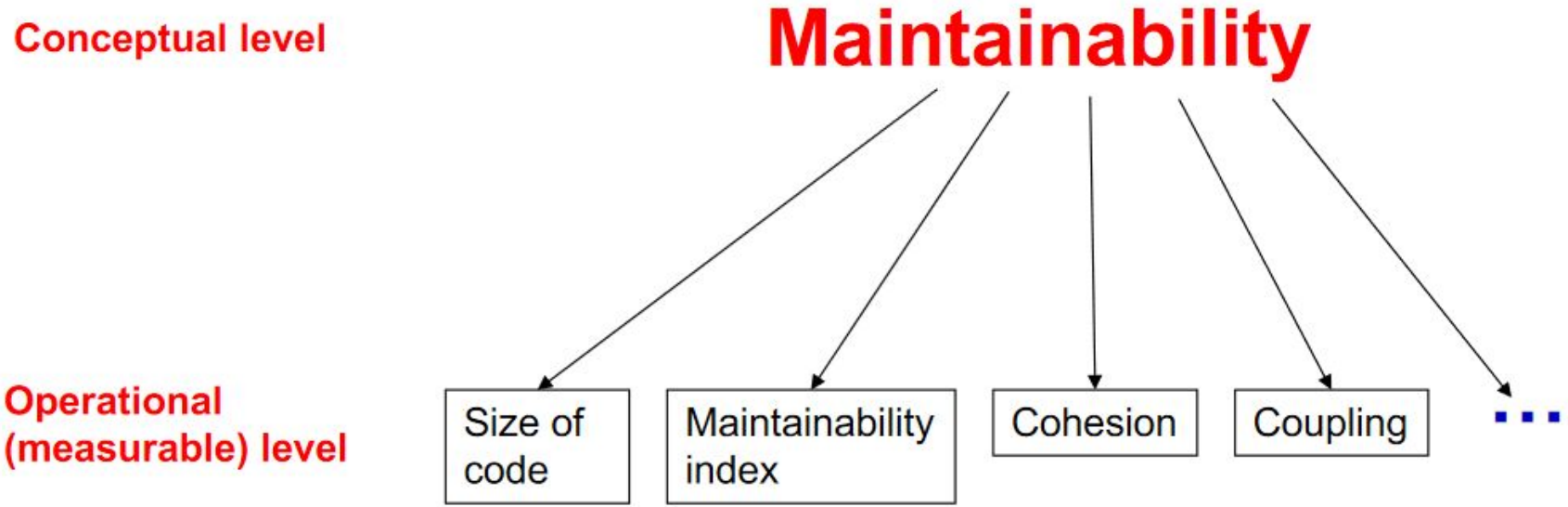
- Nominal: Divides the set of objects into categories, with no particular ordering among them. E.g. labeling, classification, defect type.

- Ordinal: Divides the set of entities into categories that are ordered. E.g. ranking, difficulty, failure severity, complexity.

- Interval: Comparing the differences between values is meaningful. E.g. temperature, start and end date of activities.

- Ratio scale: There is a meaningful “zero” value, and ratios between values are meaningful. E.g. Length, weight, lines of code, number of errors.

Maintainability



Software (Cyclomatic) complexity

- –The complexity **M** is then defined as
- $M = E - N + 2$, where
- E = the number of edges of the graph. N = the number of nodes of the graph.

*Details here are not part of the syllabus

Node	Statement
(1)	`while(x<100){`
(2)	`if (a[x] % 2 == 0) {`
(3)	`parity = 0;`
	`}`
	`else {`
(4)	`parity = 1;`
(5)	`}`
(6)	`switch(parity){`
	`case 0:`
(7)	`println( "a[" + i + "] is even");`
	`case 1:`
(8)	`println( "a[" + i + "] is odd");`
	`default:`
(9)	`println( "Unexpected error");`
	`}`
(10)	`x++;`
	`}`
(11)	`p = true;`

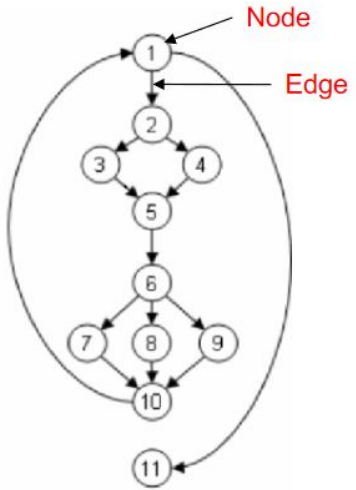


Figure from Madi, Ayman et al. "On the Improvement of Cyclomatic Complexity Metric" (2013)

Help with Deliverable 1 

Weekly tasks, etc.

Break until 13:20 

Help with Deliverable 1 

Weekly tasks, etc.

Thank you for today!