The Mythical Man Month

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Computer Science and Engineering

A “Classic” Book in Software Engineering

The Mythical Man-Month: Essays on Software Engineering - by Frederick P. Brooks, Jr.

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- Brooks => Manager for Architecture & Operating System (OS360) development for IBM360 & was also involved in design and implementation of the IBM Stretch.

- These are experiences from the mid-1960’s and 1970’s and they are still true 50+ years later!

- Brooks' Law:
  - *Adding manpower to a late software project makes it later!*

- Discussion that follows: Scheduling, Estimating, and Communications

Scheduling and Estimating

- What one factor caused the demise of Brook's software project?
  - Poor scheduling and timing estimations!

- Problems that Brooks observed from mid-1960s and 1970s:
  1) Estimation of completion time for the software project is typically very difficult to do
  2) In estimating the completion time of software projects we often assume that the <u>effort</u> and <u>progress</u> are the same, ***but this is not true!***
  3) Scheduled progress is poorly monitored (or hard to monitor)
  4) When software projects get behind the scheduled time, the typical management solution is to add more manpower to the software project. ***This may also not be the best approach!***

- In software projects we always assume that everything will go well, just how we planned.

Scheduling and Estimating (cont.)

- The man-month dilemma comes in where we assume that ***effort*** is just "*hours*"
  - Suppose we estimate a job at 480 hours
  - This means that we should finish the job in 3 weeks with 4 people (4*40*3) = 480 hours
  - But that same effort can be represented with a different approach that still yields 480 hours . . .
    - Does this mean that we could use 30 people to finish the job in 16 hours (i.e., 2 work days of 8 hours each)? It equals the same amount of effort. . .
      - (30*16) = 480
      - What is wrong with this idea?
  - Could a person spend 1/4 time (10 hours/week) and finish the task in 48 weeks (a year)?
  - Given that the task really is 480 hours, what is the ideal number of people to assign to the task and the schedule required?

Team Communications

- Many large system programs fail because of communication problems among the team

- When *n* people have to communicate among themselves, as the number of people *n* increases, their output decreases and when their output becomes negative, the project is delayed further with every person added to the project!

- Group intercommunication formula: $n(n - 1) / 2$
  - 10 developers give 10 · (10 – 1) / 2 = 45 possible paths of communication
  - 30 developers give (30*29)/2 = 435 possible paths of communication

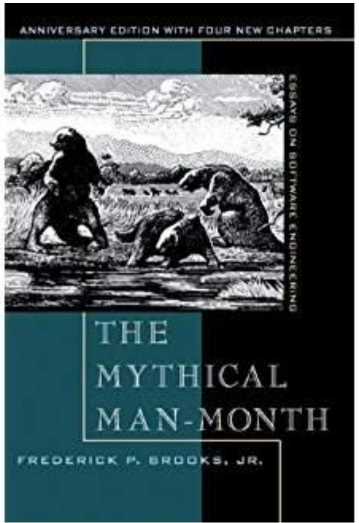
Coping with Communications Problems

Brooks, 1960s experience

- How does one cope with the communication problem?
- Besides telephone calls, meetings, E-mail, and other forms of communication, keeping a workbook for the project is extremely important
  - The modern version would be a wiki page
  - The Workbook essentially contains all documentation relevant to the project (Objectives, External Spec's, Internal Spec's, designs, test objectives and procedures, etc.)
  - It especially contains documentation about the changes made to the project as the project progresses

The Mythical Man-Month

- Updated, 20th Anniversary edition
  - © 1995 ISBN-13: 978-0-201-83595-3
- 19 short stories/essays that describe software development ‘lessons learned’ over the years
- If you are going into the software development working world and are going to make a career of it . . .
  - Suggest getting a copy of this book and reading it cover-to-cover
  - You will see examples throughout your career of many of these stories!
    - *Yes, you will !!!*
  - History tends to repeat
  - “*Being forewarned is fore-armed*!”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