



UNIVAC

Ran on COBOL  
1951

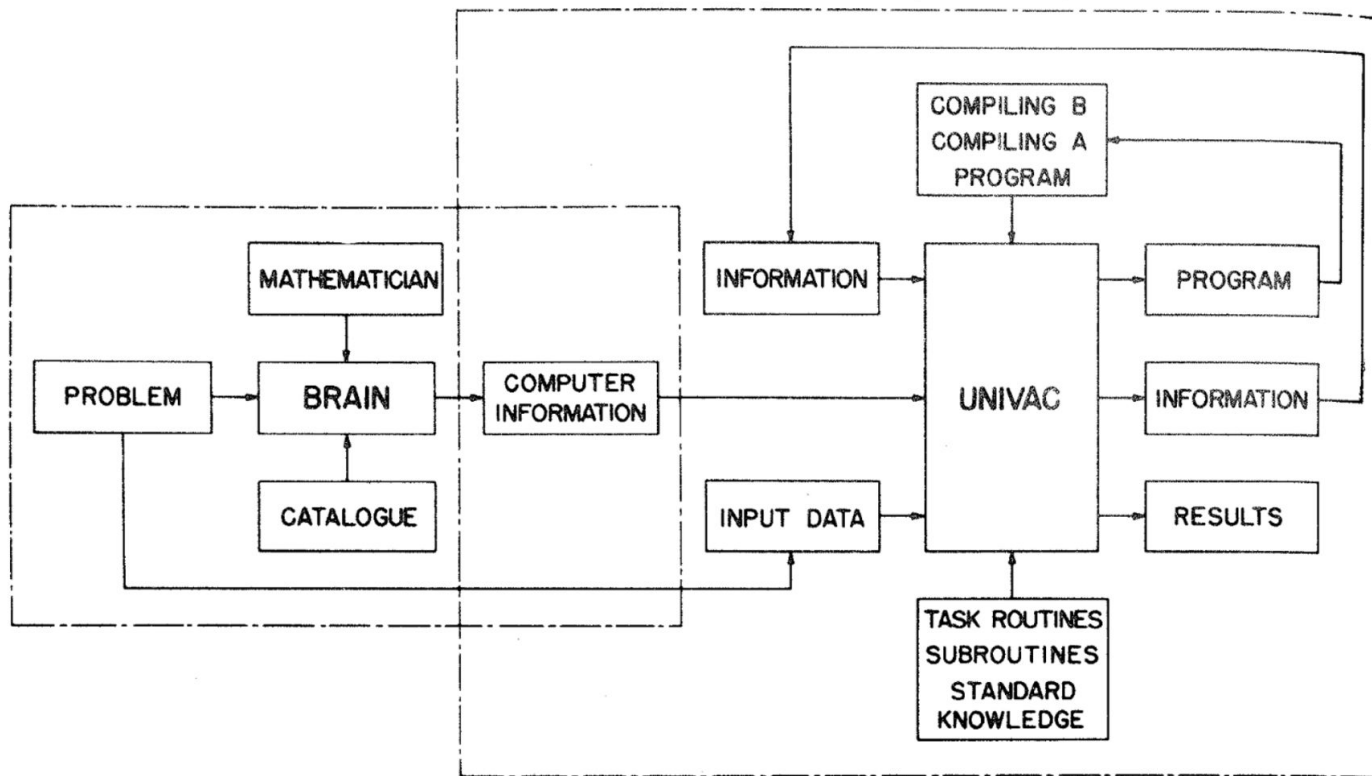


Fig. 7 - COMPUTING SYSTEM



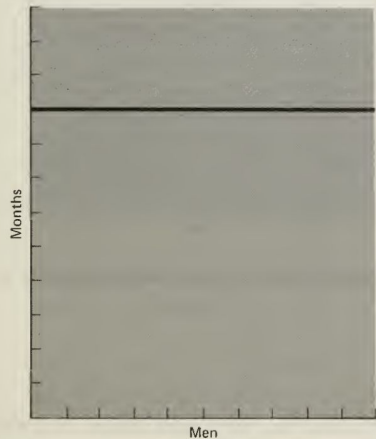


Fig. 2.2 Time versus number of workers—unpartitionable task

Frederick Brooks Jr.,  
1975

## 20 The Mythical Man-Month

smaller than it turns out to be. Therefore testing is usually the most mis-scheduled part of programming.

For some years I have been successfully using the following rule of thumb for scheduling a software task:

- $\frac{1}{3}$  planning
- $\frac{1}{6}$  coding
- $\frac{1}{4}$  component test and early system test
- $\frac{1}{4}$  system test, all components in hand.

### 3. what duct tapers do

Duct tapers are employees whose jobs exist only because of a glitch or fault in the organization; who are there to solve a problem that ought not to exist. I am adopting the term from the software industry, but I think it has more general applicability. One testimony from a software developer describes the industry like this:

Pablo: Basically, we have two kinds of jobs. One kind involves working on core technologies, solving hard and challenging problems, etc.

The other one is taking a bunch of core technologies and applying some duct tape to make them work together.

The former is generally seen as useful. The latter is often seen as less useful or even useless, but, in any case, much less gratifying than the first kind. The feeling is probably based on the observation that if core technologies were done properly, there would be little or no need for duct tape.

**FINEQUITY:** (<https://www.finequity.org>)

- tech-enabled system that gives \$1 micro-loans to incarcerated people, boosting their credit score (**credit invisible**)

**JustFix.nyc:** (<https://justfix.nyc>)

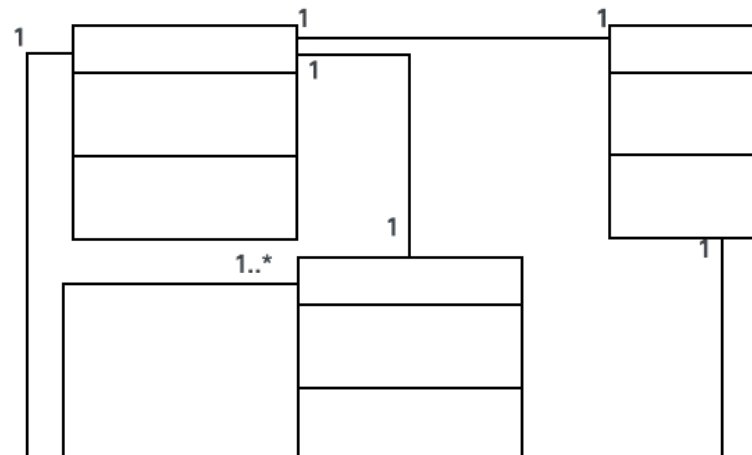
- generating the “strongly worded letter,” pre-attorney, to “encourage” landlords to make repairs; other housing paperwork (pandemic assistance, etc.)

**Goodcall:** (<https://goodcall.nyc>)

- turning the 1 prison phone call into 3 (Twilio)

## Project Work Day: 03.28.22

- Go over project proposal requirements
- Team formation open time



## Final: Project Proposal

<https://github.com/mab253/software-interventions-spring22/blob/main/assignments/finalProposal.md>

### ON PROPOSALS:

- Does not have to be **the** way that you are going to do this, but it does have to be **one clear way** that you **could** go about doing this!
- Pivots absolutely happen (and are a most exciting part of the process)
- For proposal stage, make some **decisions**, and as you build you can take them as a jumping off point - **architect!**



## Final: Project Proposal

### Summary:

- Give your project a working title, and describe it in 1 sentence. Brevity and clarity are powerful!

### Problem Space:

- Tell us what you have researched and learned about the problem domain - show depth!
- First give us the big picture, then get very specific about the distinct issue you are trying to solve
- Cite at least 2 sources
- This section should be at least 500 words

## Problems with Problem Scoping: *The 18F Guide to Lean Product Design*

For example, consider *The 18F Guide to Lean Product Design* (18F is a federal office tasked with supporting other government agencies to build and improve tech products and services). In describing its design process, 18F notes: “The first stage of any project is to do research to discover problems that need solving. Your goal is three-fold: Identify and more deeply understand the challenge facing the organization and its stakeholders; Identify the people you believe could be most helped by your solution; and, Explore the problem, context, behaviors, and motivations of the people (your intended users).”<sup>71</sup> The guide then provides the following example:

The challenge: the United States has high unemployment rate and the growth in jobs is for highly skilled workers. We need more citizens who can meet that demand, and we have evidence that college educated workers are more employed and more employable.

The people: High school graduates and adults without a degree.

The problem: Prospective college students lack information about the potential economic outcomes of a college degree, and also lack information that would lead them to be able to select which college is right for them.<sup>72</sup>

from *Design  
Justice*,  
Costanza-Chock  
(next week)

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### Current Ecosystem:

- What other tools (if any) try to solve this problem, or aim to do similar things? Why are they lacking?
- How is your project intervening with current systems?

### Your Idea:

- Tell us precisely why your project is going to help in this domain
- This section needs to address why your project is innovative, new
- Provide a very clear list of features

## Final: Project Proposal

### Project Validation

- Cite your interview, with at least 2 quotes or specific stories
- Persuade us that this project is valuable to the users who need it most!
- Do you maybe need more interviews here, to accomplish this?

## Final: Project Proposal

### User

- Who is your user?
- Be very, very specific - put us in their shoes, describe in detail their needs and how they come to your project
- Walk us through 1 example of how they might use your tool
- Address accessibility assumptions here

### User Map

- Where does your tool fit into the user's larger workflow, the larger system of the problem space?

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### Do No Harm

- Walk us through at least 1 worst case scenario related to your project's build or release - is this about data security, mis-uses of the tool, a peril of automation, a problem of scale, etc.? Tell us that you have thought about this, and suggest that you will build with this in mind.
- Are there any safeguards that you have thought of, if possible?
- This section needs to be at least 300 words

# Final: Project Proposal

## Work Plan

- What are your "system requirements"?
- What tools will you utilize in order to build your project?
  - Get very specific here - if you are using a database, which one? What language will you be writing in? If you are using a pre-existing NLP algorithm, which one are you choosing and why? Are you using APIs to connect automations together?
  - Tell us briefly why you are choosing the tools that you are, when you have options.
- Describe an order of operations for your build: where will you start, what steps will you take?

# Final: Project Proposal

## System Diagram

- Show us how the various parts of your software (database, any API calls, external services, user interface, NLP/ML, etc.) function together. Where does your data flow and how?

## Media

- This section is open to your **creativity**. You need to create 1 more piece of media to add to your proposal - is this a cleaned-up version of your paper prototype? Is this a clickable prototype? Is this a rendering of the user interface? Is this a series of photos that you have taken, showing your problem domain? Is this an audio recording of part of your validation user interviews? Is this a short video describing your pitch? Is this an animation showing how part of your system works?



## Final: Project Proposal

### On Format:

- There is no standard template for project proposals, or software engineering proposals generally!
- If you address the questions in each section, your proposal will be successful.
- Diagrams can be digital or hand-drawn (but **clean**, final versions!)

## Final: Project Proposal

### On Plagiarism:

- Any time you use language written by someone else (describing a tool, borrowing a phrase, etc.) - **YOU MUST CITE THIS SOURCE.**
- Any time you are paraphrasing an idea that you learned somewhere else, **YOU MUST CITE THIS SOURCE.**
- Encouraged to cite authors from class where helpful
- If there are violations of academic honesty in your final proposal: failing assignment, final grade in jeopardy)

## Final: Project Proposal

### Feedback:

- optional: I will read a full draft (or finished section) of your proposal if I receive it with your questions by **May 10th**.



## FEEDBACK: post-pitch!

- **Any questions**, for clarity & interest?
- **Positive feedback** - what did someone do well in presenting, and what is great about their idea?
- **Constructive feedback** - what do you still have questions about in terms of the idea, and how could they improve their presentation of it?

1

I am definitely planning on **working solo**, with my own idea:

Atsuko  
Sunil  
Shazad  
Adebayo

2

I want to **work on a team**, but I would prefer to work on my current idea:

Shiva - styleGAN  
Danny -  
misinformation,  
social media

3

I want to **join a team** and it doesn't have to be my current idea:

4

**I don't know!**

Clement  
Omar

**NOTE:** for collaborative work, we will still have ways of supporting different projects with our skills, we will still do group work; this is a question of **TEAMS** for your final build next semester