

# Welcome to Unit 3: Innovation and Expansion

CSCI1800

Dr. Aaron Sidney Wright

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# Agenda

1. Overview of Unit 3
2. Essay Topic 1: Values in Technology Design
3. Essay Topic 2: Did the Government Create the Software Industry and Silicon Valley?
4. Essay Topic 3: Connect to Women in Tech

Use these slides on your own: <https://g.aaronswright.com/>.

# Overview of Unit 3

Use the Schedule in the Course Syllabus

CSCI1800_Fall2020 : Schedule						
Unit	Week	Date	Due Dates	Tutorial	Tutorial Activity	Notes
<u><a href="#">Unit 0</a></u> <u><a href="#">Introduction</a></u>	Week1	Mon., Sep. 7,		Week1 Tutorial	None	LabourDay
		Tue., Sep. 8,				
		Wed., Sep. 9,				
		Thu., Sep. 10,	<a href="#">Open Office Hour, 10AM Atlantic and 4PM Atlantic</a>			
		Fri., Sep. 11,	Introductory post			
		Sat., Sep. 12,				
		Sun., Sep. 13,				
	Week2	Mon., Sep. 14,	Team Charter, due 5pm Atlantic	Week2 Tutorial	Synchronous Practice Session: active reading / note taking	
		Tue., Sep. 15,				
		Wed., Sep. 16,	Team Plan Unit 1, due 5pm Atlantic			
		Thu., Sep. 17,	<a href="#">Open Office Hour, 10AM Atlantic</a>			

Schedule

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# Overview of Unit 3

Use the Schedule in the Course Syllabus

Intro Lecture Monday 4:05-5:35

Interactive Guest Lecture: Mon. Nov 2. 4:05-5:25 Dr. Helen Ai He

CSCI1800\_Fall2020 : Schedule

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Schedule

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# Unit 3 Graded Activities

## Recall: the Writing Process

Invention

Organization

Composition

Revision

- 5pm Tues. 27.10.20: Team Plan Unit 2
- 5pm Wed. 4.11.20: Writing Reflection Short Exercise
- Study Break
- 5pm Mon. 16.11.20: Essay Draft
- 5pm Wed. 18.11.20: Peer-review Comments
- 5pm Fri. 20.11.20: Unit 3 Final Essay

# Unit 3 Writing Reflection

## Recall: the Writing Process

Invention

Organization

Composition

Revision

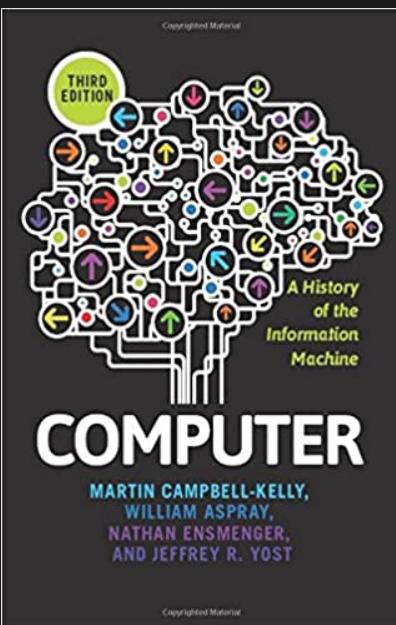
Writing Reflection Short Exercise. Reflect on the writing process.

Instructions in Assignments > "Unit 3. Writing Reflection".

Pass/Fail, worth 2%.

No Thesis Development Sheet in Unit 3

# Unit 3 Readings



## Chapters

- 7 Real Time: Reaping the Whirlwind
- 8 Software
- 9 New Modes of Computing
- Also examine the photographs in PHOTOS: From Babbage's Difference Engine to System/360 and PHOTOS: From SAGE to the Internet

# Unit 3: Events, People, Inventions

- Time period: 1940s to 1970s
- New machines: Mainframes, minicomputers, ATMs, UPCs
- Innovations: Real-time computing, Timesharing, Microelectronics, Code
- New jobs: Software consultant, Software Engineer
- New computerized businesses

# Overview of Unit 3

Watch the Essay Topic videos and participate in the Unit 3 lectures!

Intro Lecture Monday 4:05-5:35

Interactive Guest Lecture: Mon. Nov 2. 4:05-  
5:25 Dr. Helen Ai He



Part of the SAGE system: [RCAF Boeing BOMARC Missile, North Bay ON](#)

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# Essay Topic 1: Values in Technology Design

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# Essay Topics

Each essay topic has three parts:

1. Historical background
2. Core essay instruction
3. Required sources

# Historical Background



Grace Hopper at a UNIVAC computer, with COBOL manual ([1961](#))

Grace Hopper wanted computers to be **accessible** to regular people, without advanced training in mathematics. Hopper wrote the first compilers: A-0 (1951); MATH-MATIC (1955–57); FLOW-MATIC (1955–59).

"Accessibility" is an example of a **moral value** that directed Hopper's development of new technologies.

# Historical Background

## New Technologies

- Real Time computing
  - SAGE air defence system
  - SABRE Airline reservations
  - ATMs
  - Visa system
  - Time sharing
  - Computer Utilities
- ⋮

## Example Moral Values

- Privacy
  - Accuracy
  - Property / ownership
  - Accessibility
  - Democracy
  - Dignity
  - Justice
  - Autonomy
  - Freedom
  - Informed consent
- ⋮

# Essay Topic 1: Core Instruction

In an essay of between 675 and 825 words, pick one of the new technologies discussed in the Unit 3 readings and **identify the most important moral value this was embedded in the technology.**

Your thesis statement should [1] state your claim about the moral value and the technology and [2] explain *why your reader should agree* with the claim. Your essay should explain the meaning of the moral value.

(Do **not** use Grace Hopper / Flowmatic / COBOL as your example.)

# Essay Topic 1: Core Instruction

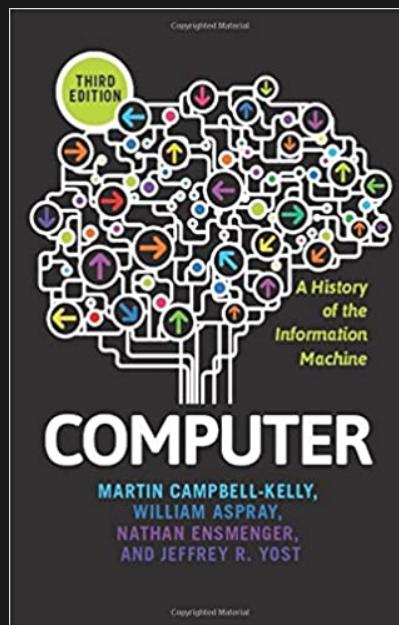
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**Example thesis statement:** Grace Hopper's use of flow diagrams and natural language demonstrates that [2] the value of accessibility drove her software designs [1].

# Essay Topic 1: Required Sources

Your essay must use quotations, paraphrases, and/or summaries from: at least one of the Unit 3 readings **and** Dr. He's guest lecture. Optionally, your essay may use the podcasts, videos, and articles in the Unit 3 Course Content area.



# Essay Topic 1: Values in Technology Design

Each essay topic has three parts:

1. Historical background
2. Core essay instruction
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Grace Hopper presenting on COBOL in front of blackboard ~1967([Hagley](#))

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# Essay Topic 2: Did the Government Create the Software Industry and Silicon Valley?

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# Essay Topics

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# Historical Background

*Heralding*

# A NEW PROFESSION!

A College Math or Science Background  
Can Start You on a New, Highly Specialized  
Career with a Challenging Future

## DIGITAL COMPUTER PROGRAMMING

EXPERIENCED PROGRAMMERS ARE ALSO INVITED TO MAKE INQUIRIES

# **SYSTEM DEVELOPMENT DIVISION**

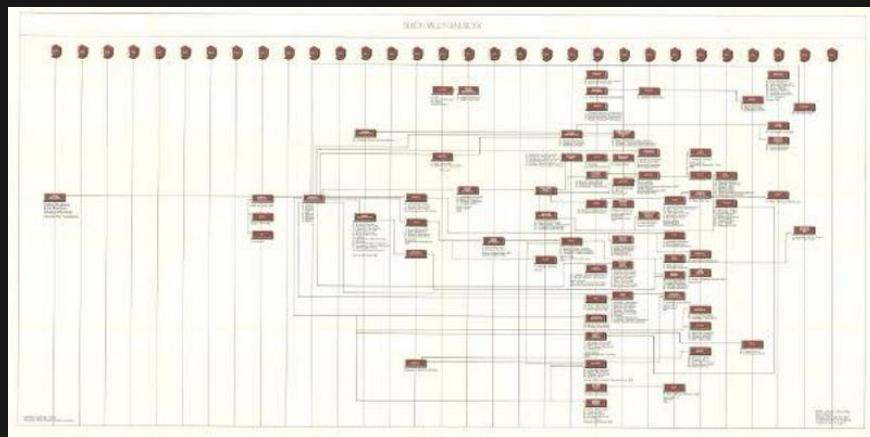
The RAND Corporation

The RAND Corporation

Dent, M.Y.T., 2500 Colorado Avenue, Santa Monica, California

(An independent non-profit research organization — long-range scientific advisors to the Air Force.)

Job ad from the RANDom News, March 1956.



# Silicon Valley "family tree" showing Fairchild Semiconductor and the Fairchildren (1977)

# Historical Background: Anti-Trust



Political cartoon showing Standard Oil Corporation dominating the United States (1904)

- Laws to limit powers of large corporations
- Break up companies; Prevent mergers; Prevent cartels
- Examples: Standard Oil, American Tobacco, AT&T, IBM
- Main goals of Anti-Trust laws
  1. Increase competition, support free markets
  2. Support democracy, decrease corporate influence

# Historical Background: Anti-Trust



- 1952: State of New York sues IBM
- 1956: IBM agrees to “Consent Decree”
- 1968: IBM unbundles software and services

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**Example:** effects of unbundling for Life Insurance software

# Historical Background: Anti-Trust



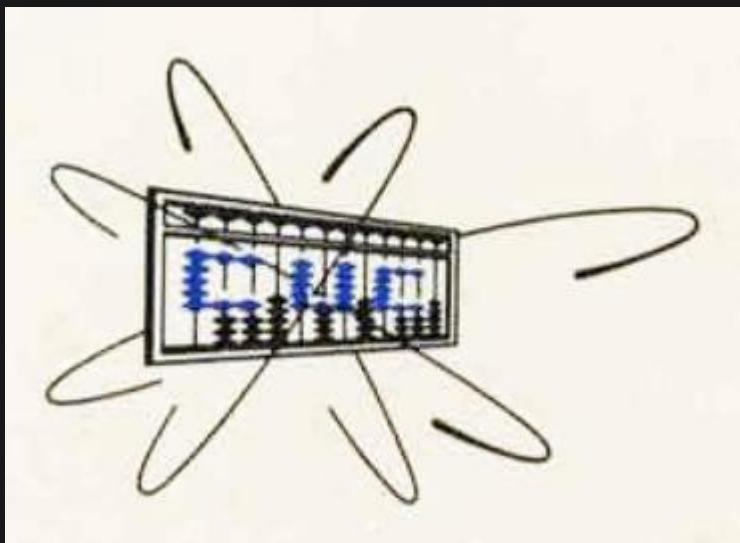
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  - Example: effects of unbundling for Life Insurance software
- Pre-1968: Few independent packages

# Historical Background: Anti-Trust



- 1952: State of New York sues IBM
- 1956: IBM agrees to “Consent Decree”
- 1968: IBM unbundles software and services
  - Example: effects of unbundling for Life Insurance software
- Pre-1968: Few independent packages
- 1972: 81 vendors with 275 packages

# Historical Background: Software



- 1950s: Large contractors and first entrepreneurs
- By mid-1960s: ~40-50 Large contractors and ~2,800 Smaller contractors

The Computer Usage Company of software consultants was founded in 1955

# Historical Background: Silicon Valley

## Historian Margaret O'Mara on Silicon Valley

Silicon Valley: How Stanford, science, and war made tech h...



# Essay Topic 2: Core Instruction

In an essay of between 675 and 825 words, **assess** the following claim: the US government was the most important factor in the development of the new software industry and Silicon Valley.

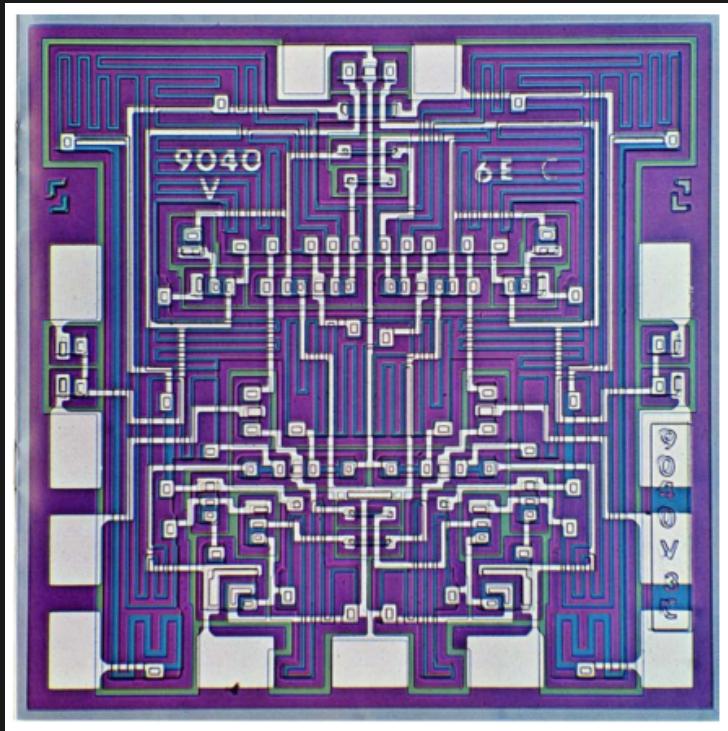
Your thesis statement should [1] explicitly assess (judge) the claim and [2] explain why that is the correct assessment.

# Essay Topic 2: Required Sources

Your essay must use quotations, paraphrases, and/or summaries from at least two of the Unit 3 readings.

Optionally, your essay may use the podcasts, videos, and articles in the Unit 3 Course Content area.

# Essay Topic 2: Did the Government Create the Software Industry and Silicon Valley?



Each essay topic has three parts:

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# Essay Topic 3: Connect to Women in Tech

- Read Essay 3 description in BrightSpace
- Watch "Queen of Code" documentary: [vimeo.com/118556349](https://vimeo.com/118556349)

# Thank you for watching!

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CSCI1800 Fall 2020

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