

# Welcome to Unit 1: Before the Computer

CSCI1800 Fall 2020  
Dr. Aaron Sidney Wright  
[asw@dal.ca](mailto:asw@dal.ca)



DALHOUSIE  
UNIVERSITY

# Agenda

1. Teaching Team
2. What is Unit 1 about?
3. Essay Questions
4. Next Steps

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

# 1. Teaching Team

Dr. Aaron S. Wright, [asw@dal.ca](mailto:asw@dal.ca), for more info:  
[aaronswright.com](http://aaronswright.com)

- Historian of Science and Technology (esp. Physics and Nuclear things)
- Joined Dal 2018, Before that:
- Postdoc @Stanford University, 2016-18
- Postdoc @Harvard University, 2014-16
- PhD from University of Toronto in 2014
- BA&Sc (Physics and History) from McGill University in 2008



I enjoy photography, and skiing, and wilderness canoeing, and cooking and... I hope to meet you all in person one day soon!

# 1. Teaching Team

There are 14 amazing Teaching Assistants in CSCI1800

Tutorial	TA	Email	Tutorial	TA	Email
T09	Allan Masterson	AI537064@dal.ca	T08	Joy Shand	joy.shand@dal.ca
T02	Allison Graham	ai518286@dal.ca	T01, T13, T19	Kevin Gaul	Kevin.Gaul@dal.ca
T11, T18	Dana Campbell	dana.campbell@dal.ca	T10	Dr. Matthew Furlong	mmfurlon@dal.ca
T05	Gabby Mills	Gabrielle.Mills@Dal.Ca	T03	Matthew Perkins-McVey	Matthew.J.PM@Dal.Ca
T06, T15, T20	Holly Hanes	Holly.hanes@dal.ca	T14, T17	Dr. Michelle Lee	michellelee@dal.ca
T04	Jacqui Deighton	jc769100@dal.ca	T12	Sandi Stewart	sandi.stewart@dal.ca
T07	Jenna Pierson	Jenna.Pierson@dal.ca	T16	Sarah Boyle	sr979637@dal.ca

# 1. Tutorial Practice Sessions

Meet your TA!

Go to your Team Discussion Area:

Home > Discussions > T# Team Discussion

**Tutorial Practice Sessions start** in the week of Sept. 14–Sept. 18!

To attend: At the officially-scheduled time, click on Collaborate Ultra and look for your tutorial session.

Can't make it? Watch for an email and check your Team Discussion Area

## 2. What is Unit 1 about?

## 2. What is Unit 1 about?

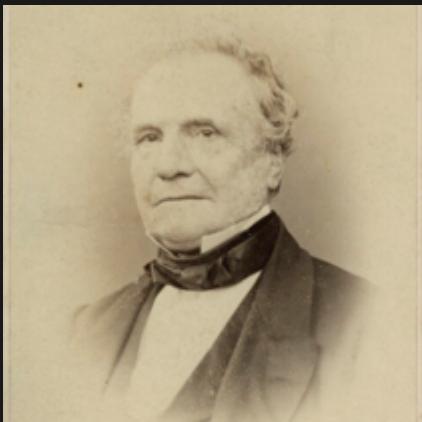
The prehistory of modern computing

## 2. What is Unit 1 about?

The prehistory of modern computing

The people, the machines, and the companies  
that shaped computing before World War II

## 2. What is Unit 1 about?



Charles Babbage (born 1791 – died 1871), designed the "Difference Engine" and the "Analytical Engine," digital mechanical computing machines



Augusta Ada King, Countess of Lovelace (1815–1852) ([Science Museum](#))

# 2. What is Unit 1 about?

Nature of Operation.	Variables acted upon.	Variables receiving results.	change in the value on any Variable.	Statement of Results.	B <sub>1</sub> in decim fraction.												B <sub>3</sub> in decim fraction.											
					0 1	0 2	0 4	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0									
$\times$	$^1V_2 \times ^1V_3$	$^1V_4, ^1V_5, ^1V_6$	$\begin{cases} ^1V_2 = ^1V_2 \\ ^1V_3 = ^1V_3 \\ ^1V_4 = ^2V_4 \\ ^1V_1 = ^1V_1 \end{cases}$	$= 2n \dots$	...	2	$n$	$2n$	$2n$	$2n$																		
$-$	$^1V_4 - ^1V_1$	$^2V_4$	$\begin{cases} ^1V_4 = ^2V_4 \\ ^1V_1 = ^1V_1 \end{cases}$	$= 2n-1 \dots$	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		
$+$	$^1V_5 + ^1V_1$	$^2V_5$	$\begin{cases} ^1V_5 = ^2V_5 \\ ^1V_1 = ^1V_1 \end{cases}$	$= 2n+1 \dots$	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		
$\div$	$^2V_6 + ^2V_4$	$^1V_{11}$	$\begin{cases} ^2V_6 = ^0V_5 \\ ^2V_4 = ^0V_4 \end{cases}$	$= \frac{2n}{2n+1} \dots$	...	...	...	0	0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...			
$\div$	$^1V_{11} + ^1V_2$	$^2V_{11}$	$\begin{cases} ^1V_{11} = ^2V_{11} \\ ^1V_2 = ^1V_2 \end{cases}$	$= \frac{1}{2} \cdot \frac{2n-1}{2n+1} \dots$	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...			
$-$	$^0V_{13} - ^2V_{11}$	$^1V_{13}$	$\begin{cases} ^2V_{11} = ^0V_{11} \\ ^0V_{13} = ^1V_{13} \end{cases}$	$= -\frac{1}{2} \cdot \frac{2n-1}{2n+1} = A_0 \dots$	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...			
$-$	$^1V_3 - ^1V_1$	$^1V_{10}$	$\begin{cases} ^1V_3 = ^1V_3 \\ ^1V_1 = ^1V_1 \end{cases}$	$= n-1 (= 3) \dots$	1	...	$n$	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...			
$+$	$^1V_2 + ^0V_7$	$^1V_7$	$\begin{cases} ^1V_2 = ^1V_2 \\ ^0V_7 = ^1V_7 \end{cases}$	$= 2+0=2 \dots$	...	2	...	...	...	...	...	...	...	...	2													
$\div$	$^1V_6 + ^1V_7$	$^3V_{11}$	$\begin{cases} ^1V_6 = ^1V_6 \\ ^0V_{11} = ^3V_{11} \end{cases}$	$= \frac{2n}{2} = A_1 \dots$	...	...	...	...	...	...	...	...	...	...	2n	2	...	...	...	...	...	...	...	...	...			
$\times$	$^1V_{21} \times ^3V_{11}$	$^1V_{12}$	$\begin{cases} ^1V_{21} = ^1V_{21} \\ ^3V_{11} = ^3V_{11} \end{cases}$	$= B_1 \cdot \frac{2n}{2} = B_1 A_1 \dots$	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...			
$+$	$^1V_{12} + ^1V_{13}$	$^2V_{13}$	$\begin{cases} ^1V_{12} = ^0V_{12} \\ ^1V_{13} = ^2V_{13} \end{cases}$	$= -\frac{1}{2} \cdot \frac{2n-1}{2n+1} + B_1 \cdot \frac{2n}{2} \dots$	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...			
$-$	$^1V_{10} - ^1V_1$	$^2V_{10}$	$\begin{cases} ^1V_{10} = ^2V_{10} \\ ^1V_1 = ^1V_1 \end{cases}$	$= n-2 (= 2) \dots$	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...			
$-$	$^1V_6 - ^1V_1$	$^2V_6$	$\begin{cases} ^1V_6 = ^2V_6 \\ ^1V_1 = ^1V_1 \end{cases}$	$= 2n-1 \dots$	1	...	...	...	...	...	...	...	...	...	2n-1													
$+$	$^1V_1 + ^1V_7$	$^2V_7$	$\begin{cases} ^1V_1 = ^1V_1 \\ ^1V_7 = ^2V_7 \end{cases}$	$= 2+1=3 \dots$	1	...	...	...	...	...	...	...	...	...	3													
$\div$	$^2V_6 + ^2V_7$	$^4V_8$	$\begin{cases} ^2V_6 = ^2V_6 \\ ^2V_7 = ^2V_7 \end{cases}$	$= \frac{2n-1}{3} \dots$	...	...	...	...	...	...	...	...	...	2n-1	3	$\frac{2n-1}{3}$												
$\times$	$^1V_8 \times ^3V_{11}$	$^4V_{11}$	$\begin{cases} ^1V_8 = ^0V_8 \\ ^3V_{11} = ^4V_{11} \end{cases}$	$= \frac{2n}{2} \cdot \frac{2n-1}{3} \dots$	...	...	...	...	...	...	...	...	...	...	0	...	...	$\frac{2n}{2} \cdot \frac{2n-1}{3}$										
$-$	$^2V_6 - ^1V_1$	$^3V_6$	$\begin{cases} ^1V_1 = ^1V_1 \\ ^2V_6 = ^3V_6 \end{cases}$	$= 2n-2 \dots$	1	...	...	...	...	...	...	...	...	2n-2														
$+$	$^1V_1 + ^2V_7$	$^3V_7$	$\begin{cases} ^1V_1 = ^1V_1 \\ ^2V_7 = ^3V_7 \end{cases}$	$= 3+1=4 \dots$	1	...	...	...	...	...	...	...	...	4														
$\div$	$^3V_6 + ^3V_7$	$^1V_9$	$\begin{cases} ^3V_6 = ^3V_6 \\ ^3V_7 = ^3V_7 \end{cases}$	$= \frac{2n-2}{4} \dots$	...	...	...	...	...	...	...	...	...	2n-2	4	$\frac{2n-2}{4}$	...	$\left\{ \frac{2n}{2}, \frac{2n-1}{3}, \frac{2n-2}{3} \right\}$	$= A_3$									
$\times$	$^1V_9 \times ^4V_{11}$	$^5V_{11}$	$\begin{cases} ^1V_9 = ^0V_9 \\ ^4V_{11} = ^5V_{11} \end{cases}$	$= \frac{2n}{2} \cdot \frac{2n-1}{3} \cdot \frac{2n-2}{4} = A_3 \dots$	...	...	...	...	...	...	...	...	...	0														
$\times$	$^1V_{22} \times ^5V_{11}$	$^0V_{12}$	$\begin{cases} ^1V_{22} = ^1V_{22} \\ ^0V_{12} = ^2V_{12} \end{cases}$	$= B_3 \cdot \frac{2n}{2} \cdot \frac{2n-1}{3} \cdot \frac{2n-2}{4} = B_3 A_3 \dots$	...	...	...	...	...	...	...	...	...	...	0				$B_2 A_3$									
$+$	$^2V_{12} + ^2V_{13}$	$^3V_{13}$	$\begin{cases} ^2V_{12} = ^0V_{12} \\ ^2V_{13} = ^3V_{13} \end{cases}$	$= A_0 + B_1 A_1 + B_3 A_2 \dots$	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0		$\{ A_3 + B_1 A_1 + B_3 A_2 \}$							
$-$	$^2V_{10} - ^1V_1$	$^3V_{10}$	$\begin{cases} ^2V_{10} = ^3V_{10} \\ ^1V_1 = ^1V_1 \end{cases}$	$= n-3 (= 1) \dots$	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	$n-3$								
Here follows a repetition of Operations thirteen to twenty-three.																												
$+$	$^4V_{13} + ^0V_{24}$	$^1V_{24}$	$\begin{cases} ^4V_{13} = ^0V_{13} \\ ^0V_{24} = ^1V_{24} \end{cases}$	$= B_7 \dots$	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		
$+$	$^1V_1 + ^1V_3$	$^1V_3$	$\begin{cases} ^1V_1 = ^1V_1 \\ ^1V_3 = ^1V_3 \end{cases}$	$= n+1=4+1=5 \dots$	1	...	$n+1$	...	...	0	0	...	...	...	.	.	.	.	.	.	.	.	.	.	.	.		
			$^5V_6 = ^0V_6$ by a Variable-card.																									
			$^5V_7 = ^0V_7$ by a Variable-card.																									



Augusta Ada King, Countess of Lovelace (1815–1852)

## 2. What is Unit 1 about?

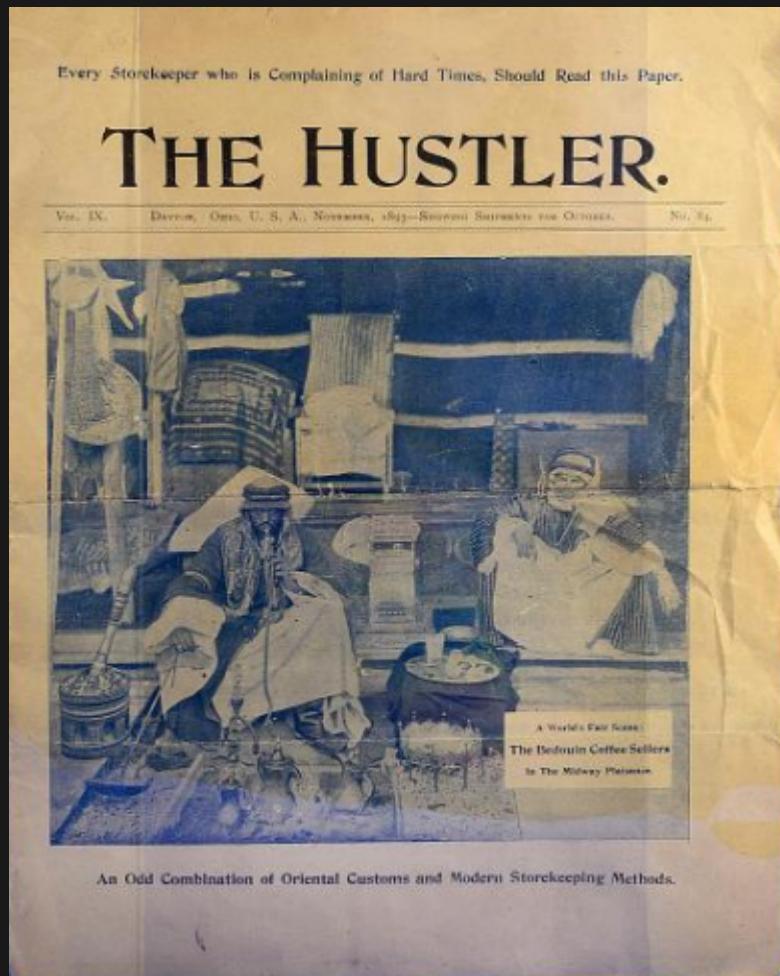
The first computer programmer (?)



# Augusta Ada King, Countess of Lovelace (1815–1852)

Here follows a repetition of Operations thirteen to twenty-three.

## 2. What is Unit 1 about?



NCR's The Hustler (Smithsonian)



Thomas J Watson, Sr. (1874–1956), portrait by  
Yousuf Karsh ([CHM](#))

## 2. What is Unit 1 about?

### 3. Essay Questions

Each student must choose one essay topic from the list provided.  
All essays must be based on the assigned readings.

1. The uses of computers, then and now
2. The role of governments
3. Connect to today's tech companies

Read the questions in  
BrightSpace > Unit 1 > Welcome



Ada Lovelace Day is 13 October

## 3.1 The uses of computers, then and now

In *Computer: A history of the information machine* Martin Campbell-Kelly et al. argue that modern computers perform the same functions as two jobs from the nineteenth century (i.e. the 1800s): the office clerk and the human computer. This argument provides the structure for the first three chapters of *Computer*. The chapters discuss the people and companies that changed the history of mathematical calculation and office tasks like typing, keeping databases of customer information, and financial accounting.

## 3.1 The uses of computers, then and now

In an essay of between 675 and 825 words, assess Campbell-Kelly et al.'s claim that modern computers essentially perform the same jobs as officer clerks and human computers.

When you **assess** a claim, you evaluate it, or judge its quality: is it false? only a little true? half true? mostly true? true?

### **3.1 The uses of computers, then and now**

Campbell-Kelly et al.'s claim is about the past *and* it is about the present. To assess the claim, you will need data about the past and data about the present.

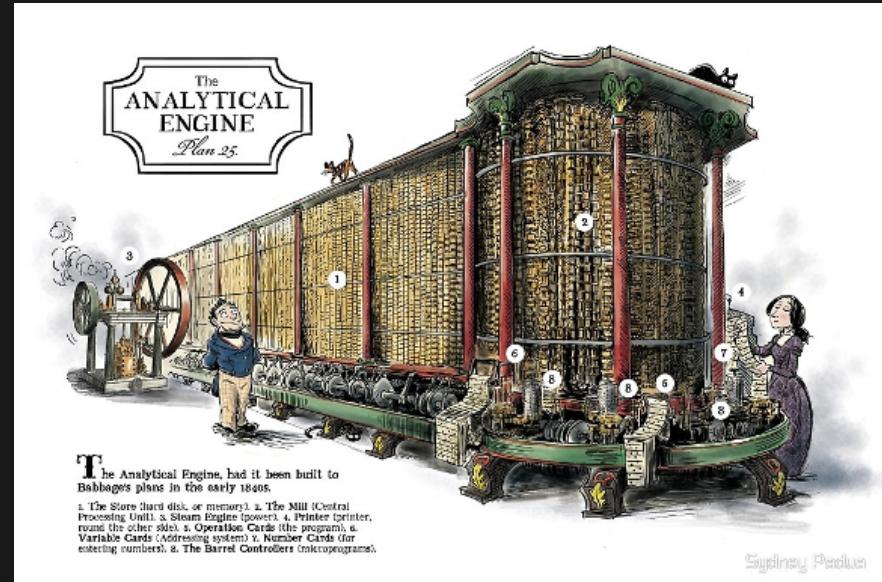
In your essay, **use material from at least two of the Unit 1 chapters** to provide your data about clerks and mathematical computers in the nineteenth century. To provide data about computer use in the present, **use one paragraph of your essay to describe some of the ways you use computers in your everyday life.** You should describe some of the ways you interact with computers, and some of the functions computers provide for you. Then assess: how much is this similar to the nineteenth century clerks?

# 3. Essay Questions

Each student must choose one essay topic from the list provided.  
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BrightSpace > Unit 1 > Welcome



Cartoon by Sydney Padua

## 3.2 The role of governments

The first three chapters of *Computer: A history of the information machine* detail some of the different ways early computing interacted with governments, particularly the British government and the United States' government. Governments provided funding (and took it away) and were important customers of computing firms. On the other hand, there were other important factors in the development of computing. These factors included individuals and their personalities, and private business interests.

## 3.2 The role of governments

In an essay of between 675 and 825 words, assess whether governments were the most important factor in the nineteenth century history of computing. When you **assess** a claim, you evaluate it, or judge its quality: is it false? only a little true? half true? mostly true? true?

## 3.2 The role of governments

In your essay, use material from at least two of the Unit 1 chapters to provide data about the interaction of governments and computing. Decide whether governments were most important, and consider comparisons to other more/less important factors. Your essay must also explain the meaning of "most important."

### 3. Essay Questions

Each student must choose one essay topic from the list provided.  
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Read the questions in  
BrightSpace > Unit 1 > Welcome



IBM Sponsored the 1939 World's Fair

### 3.3 Connect to today's tech companies

In *Computer: A history of the information machine* Martin Campbell-Kelly et al. give a lot of detail about the "prehistory" of IBM: of Herman Hollerith, Thomas Watson, C-T-R, and eventually IBM. Important themes of this story are the interaction of computing and government, the strengths of individual personalities, and the crucial role of marketing, moralism, and business models.

### 3.3 Connect to today's tech companies

In an essay of between 675 and 825 words, compare this early history of IBM to a **contemporary** (twenty-first century) tech company. Assess what has changed from the early days of IBM to today, and what has remained the same. You could pick one or more of the themes listed above, for example comparing the early IBM business model to a contemporary business model.

When you **assess** a claim, you evaluate it, or judge its quality: is it all different? mostly different? half way? mostly new? all new?

### 3.3 Connect to today's tech companies

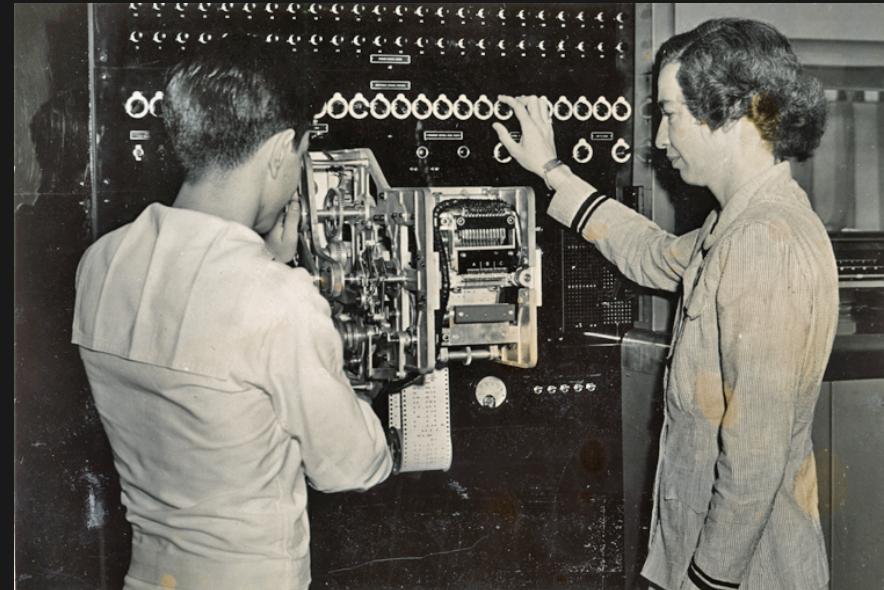
This question is about the past *and* it is about the present. In your essay, **use material from at least two of the Unit 1 chapters** to provide data about the prehistory of IBM. To provide data about a contemporary tech company, find one article about that company. The article must follow the guidelines in the syllabus. It must: be in English; be available to the teaching team; and be published in 2020 in a reputable publication (newspaper, magazine, broadcaster, try searching the Dal library for online access, **for example**). Each student writing this essay should find their own article.

### 3. Essay Questions

Each student must choose one essay topic from the list provided.  
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1. The uses of computers, then and now
2. The role of governments
3. Connect to today's tech companies

Read the questions in  
BrightSpace > Unit 1 > Welcome



Grace Hopper at the IBM/ Harvard Mark I  
Smithsonian

## 4. Next Steps

## 4. Next Steps

- Connect with your TA in Discussions > T# Team Discussion

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- Connect with your TA in Discussions > T# Team Discussion
- Peruse the optional videos and podcasts in Content > Unit 1

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- Plan to build study tools with your team

# 4. Next Steps

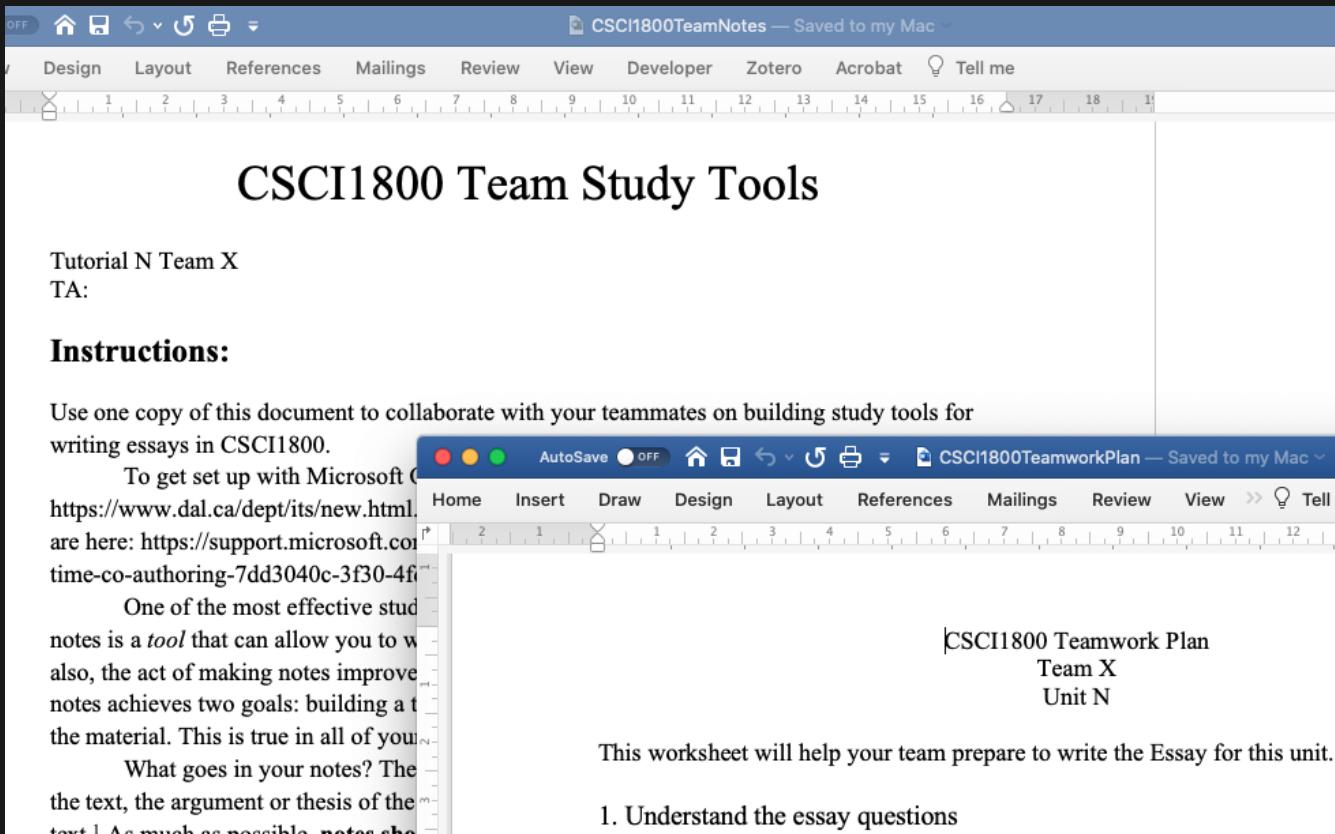
- Connect with your TA in Discussions > T# Team Discussion
- Peruse the optional videos and podcasts in Content > Unit 1
- Read the [syllabus](#) schedule, assessments, and grading sections
- Plan to build study tools with your team
  - BSpace > Assessments > Assignments > Team Plan Unit 1
  - Each Team submits one copy of your plan by 5pm on Wednesday Sept 16

# 4. Next Steps

- Connect with your TA in Discussions > T# Team Discussion
- Peruse the optional videos and podcasts in Content > Unit 1
- Read the [syllabus](#) schedule, assessments, and grading sections
- Plan to build study tools with your team
  - BSpace > Assessments > Assignments > Team Plan Unit 1
  - Each Team submits one copy of your plan by 5pm on Wednesday Sept 16
- Start active reading and [Making Notes](#)

# 4. Docs and Templates

# 4. Docs and Templates



The screenshot shows a Microsoft Word document titled "CSCI1800TeamNotes — Saved to my Mac". The ribbon menu includes "Design", "Layout", "References", "Mailings", "Review", "View", "Developer", "Zotero", "Acrobat", and "Tell me". The status bar at the bottom shows page numbers from 1 to 14.

## CSCI1800 Team Study Tools

Tutorial N Team X  
TA:

**Instructions:**

Use one copy of this document to collaborate with your teammates on building study tools for writing essays in CSCI1800.

To get set up with Microsoft OneNote, go to <https://www.dal.ca/dept/its/new.html>. Support documents are available at <https://support.microsoft.com/en-us/article/time-co-authoring-7dd3040c-3f30-4fcf-9a2d-1a2a2a2a2a2a>.

One of the most effective study tools is a *tool* that can allow you to write notes. Not only does writing notes improve memory, but it also improves comprehension. This achieves two goals: building a better understanding of the material. This is true in all of your classes.

What goes in your notes? The text, the argument or thesis of the text.<sup>1</sup> As much as possible, notes should be handwritten.

This worksheet will help your team prepare to write the Essay for this unit.

1. Understand the essay questions

CSCI1800 Teamwork Plan  
Team X  
Unit N

# 4. Docs and Templates

The screenshot shows a Microsoft Word document with the following content:

**Notes on: 1 When Computers Were People**

Historical time period, "Victorian period" 1837-1901.

LOGARITHMS AND MATHEMATICAL TABLES

CHARLES BABBAGE AND TABLE MAKING

The document is a Microsoft Word file with the following header information:

Title - Credo Reference

https://search-credoreference-com.ezproxy.library.dal.ca/

DalOnline Brightspace DalHist DalFCS Halifax Libraries Guardian Gmail Maps Amazon Music Dalhousie University

Infobase CREDO Reference Search Advanced Search Search History DALHOUSIE UNIVERSITY

The document is in Microsoft Word format, indicated by the ribbon menu at the top.

# 4. Docs and Templates

The screenshot shows a web browser window with a dark theme. The address bar displays "Title - Credo Reference" and the URL "https://search-credoreference-com.ez". The page content is from the Infobase CREDO Reference database, specifically the entry for "BEFORE THE COMPUTER" in "Computer: A History of the Information Age". The right side of the screen shows the "Course Docs" section of a LMS, likely Brightspace, for the module "CSCI1800 - Computing & Society in History...". The LMS interface includes a navigation bar with links like "Course Home", "Content", "Discussions", "Assessments", "My Tools", "Help", and "Course". Below the navigation is a search bar with "Search Topics" and a magnifying glass icon. The main content area lists various course documents:

- CSCI1800syllabus2020 (PDF document)
- CSCI1800TeamCharter (Word Document)
- CSCI1800TeamworkPlan (Word Document)
- CSCI1800WritingOutline (PDF document)
- CSCI18001801WritingReflection (Word Document)
- CSCI1800Fall2020ScheduleSept3 (PDF document)
- CSCI18001801ThesisDevelopmentFill (PDF document)
- CSCI1800CoverEssayTemplate (Word Document)
- CSCI1800TeamNotes (Word Document)

At the bottom of the LMS list, there is a link "Add a sub-module...". The background of the browser window shows a Microsoft Word document with sections like "Notes on: 1 W", "Historical time p", "LOGARITHMS", and "CHARLES BAIE".

## 4. Next Steps

- Think of questions for **live open Office Hours**
  - What topics do you want to learn in the Synchronous Lecture on Monday Sept 21?
- Tell Dr. Wright in the Discussion Forum and/or Office Hours

# Agenda

1. Teaching Team
2. What is Unit 1 about?
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Use these slides on your own: <https://g.aaronswright.com/>.

# Thank you for watching!

Dr. Aaron Sidney Wright

CSCI1800 Fall 2020

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