TEMPLE UNIVERSITY

Digital Systems

Platforms & Digital Business Models, including API's

FOX MIS

ROADMAP

START

Week 1:
Introduction & Systems Analysis
- Course Description
- Systems Thinking

Week 1:
Introduction to Process Mapping
- Systems & Processes
- Swim Lane Diagrams

Assignments due::
- Course video intro
- Max Labs Pre-Flight
- Proctorio Practice Quiz

Week 2:
Data Modeling & ERD

- Max Labs 1A/1B- due
- Max Labs 2A/2B due

Week 2:

Exam #1

1/29 – 1/31: Exam Availability

Week 3:
Information Systems
- ERP & CRM
- Data Analytics & SCM

- Max Labs 3a/3b due
- Lean IT #1 due

Week 4:
Platforms & Digital Business Models
- API's
- Cloud

Week 4:
Cybersecurity & AI
- Protection Protocols
- Artificial Intelligence

- Lean IT #2 due
- Cyber Security due

Week 4 :

Exam #2

2/12-2/14 Exam Availability

Week 5:
JavaScript Unit #1 & 2
- Hello World,
- Variables
- Operator types
- Strings

SoloLearn Coding due

Week 6:
JavaScript Unit #3&4
- Logical Operators
- Conditional Types
- Intro to Loops
- While and Do
- Coding Challenges *3) due
- Proctorio Coding Practice due

Week 7:
HTML & CSS

- Coding Assignment -due

Week 7:

Exam #3

3/5 – 3/7: Exam Availability

FINISH

Digital Platforms?

"…facilitates commercial interactions between at least two different groups…"

- What are some core functions of a platform?
  - Audience Building
  - Matchmaking
  - Providing Core Tools & Services

Source: https://thumbor.forbes.com/thumbor/960x0/https%3A%2F%2Fblogs-images.forbes.com%2Fpeterbendorsamuel%2Ffiles%2F2018%2F03%2FDigital-Platform-Strategy-913629568.jpg

Digital Platforms

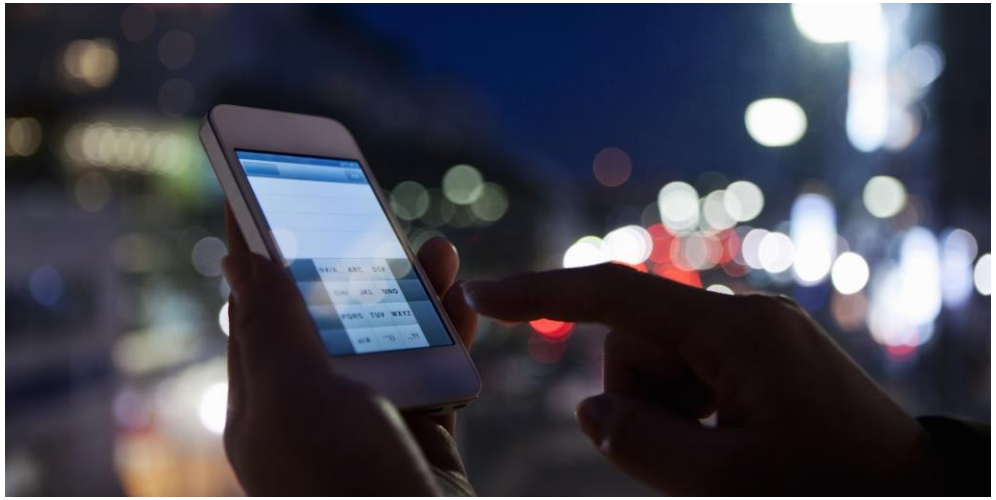
What are the benefits?

- For Companies?
- For Consumers?
- For Industry?

Source: https://www.arup.com/-/media/arup/images/perspectives/themes/cities/how-can-cities-benefit-from-becoming-digital-platforms-2000x833.jpg

Network Effects

What is the impact of Network Effects on the different types of platforms?



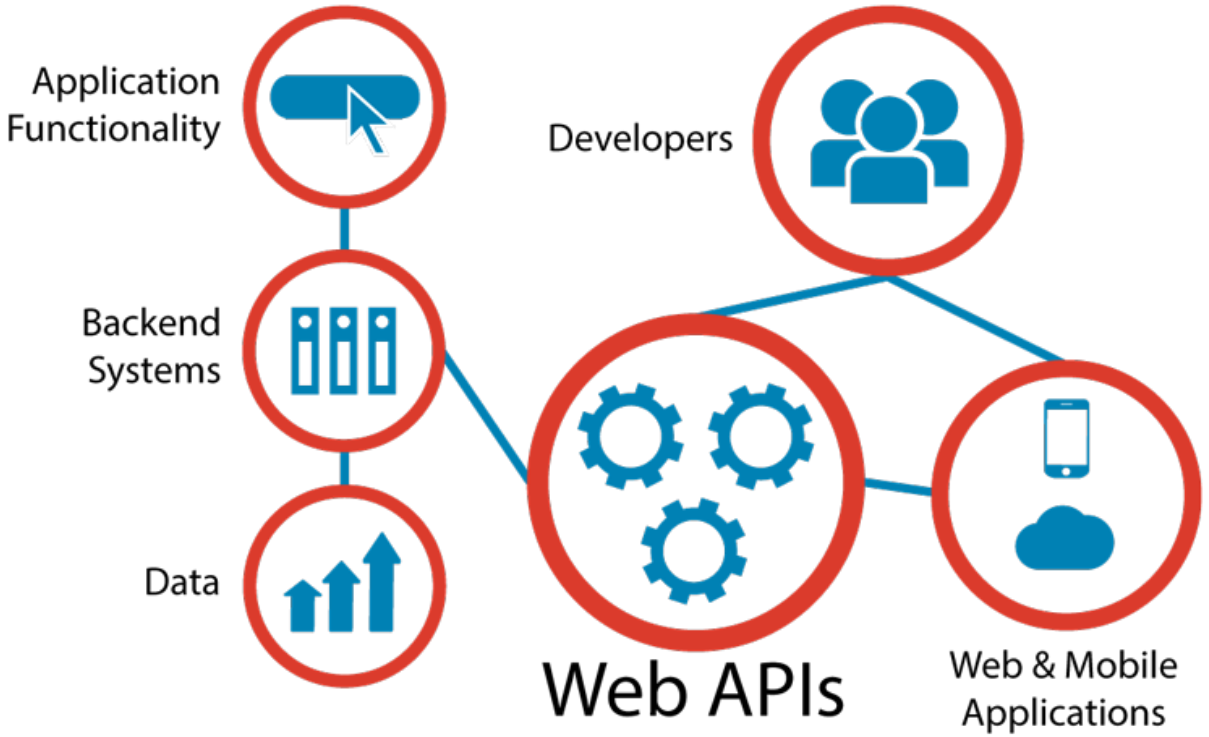
Source: https://www.snapsuites.com/wp-content/uploads/2017/05/o-SMARTPHONE-NIGHT-facebook.jpg

Source: https://g.foolcdn.com/image/?url=https%3A%2F%2Fg.foolcdn.com%2Feditorial%2Fimages%2F428448%2Fthe-network-effect-getty.jpg&w=700&op=resize

API's: Application Programming Interface

What is an API?

- Connect computer software components
- Contract for Data Interaction
  - Facilitates interactions between front & backend IT systems (Web API's)
- Can you think of any examples???
  - Hint…think smartphones and IoT.

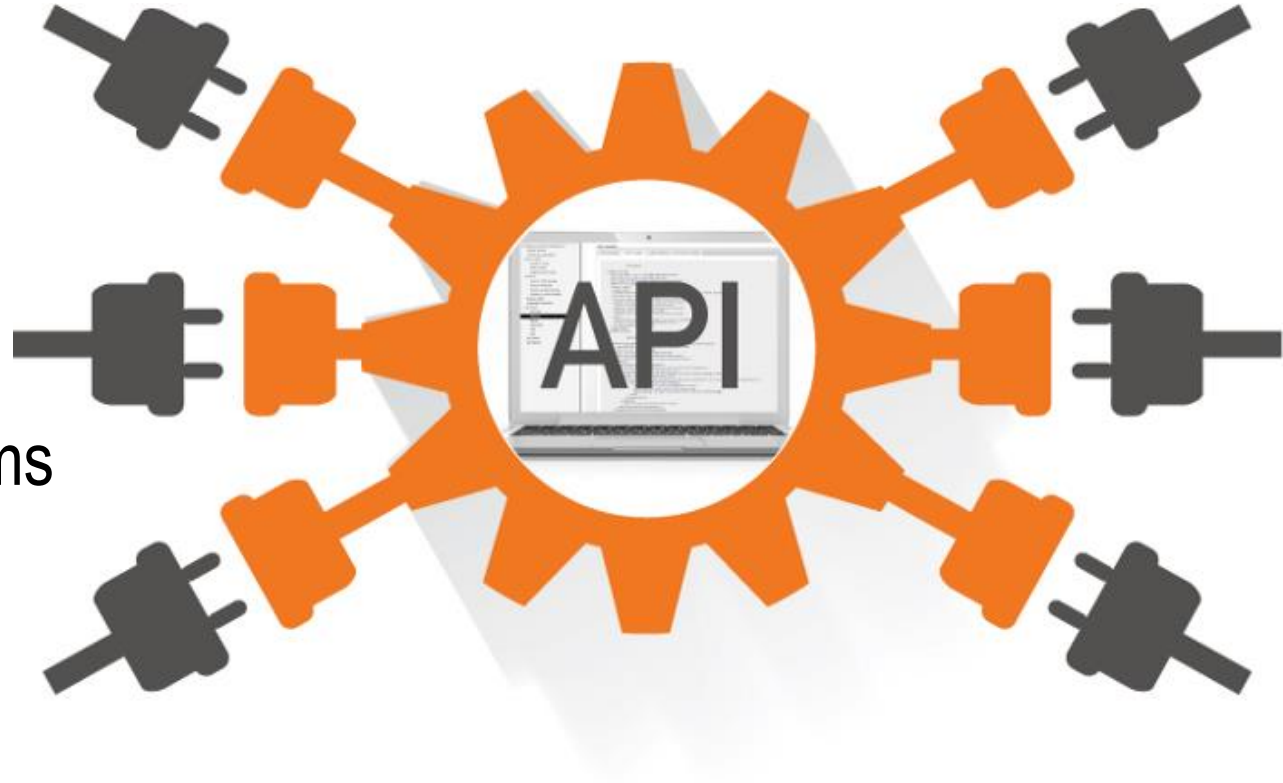


Source: https://www.apiacademy.co/assets/2015/04/Web-APIs-v5_0.png

API's: "...a strategic business imperative"

API's Key Considerations

- Extract more value from existing assets
- Drive new innovations
- Easier access across multiple ecosystems
- API's are Products – "building blocks"
  - "live beyond any one project"
  - "reusable assets"

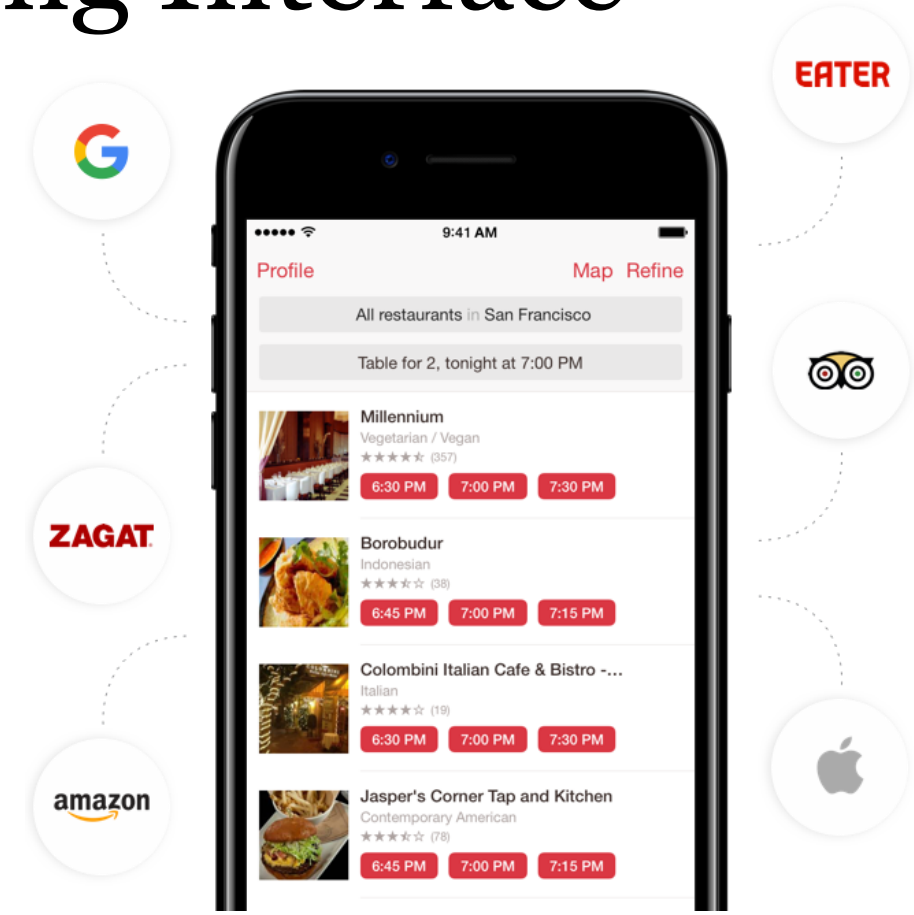


Source: https://miro.medium.com/max/700/1*6K4eQYf0R7cPCzukMCtu7Q.png

API's: Application Programming Interface

API Case Study: OpenTable

- What happens when you search for a restaurant?
- What types of data is being retrieved?



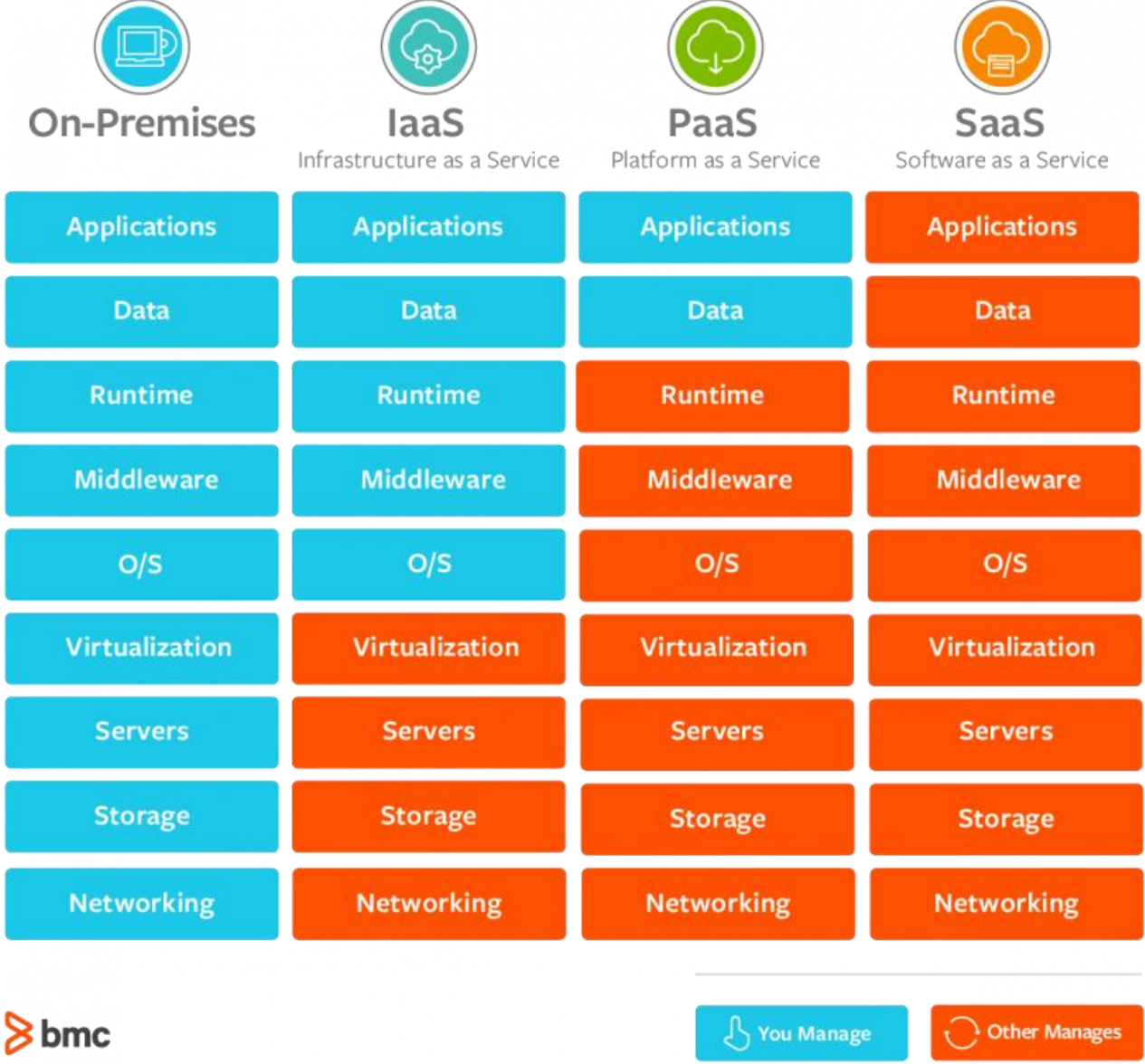
Source: https://restaurant.opentable.com/assets/fg/g/opentable-iphone-app-partner-logos.png

Cloud Computing

3 Basic Service types to Consider

1. Infrastructure as a Service (IaaS)
2. Platform as a Service (PaaS)
3. Software as a Service (SaaS)

Which one do you use (consume) on a daily basis?



Source: https://blogs.bmc.com/wp-content/uploads/2017/09/saas-vs-paas-vs-iaas-810x754.png

IaaS (Infrastructure as a Service)

Case Study: AWS and Capital One

1. Run any application anywhere
2. Bring products to market quickly
3. More resilient architecture around systems
4. Design for customer needs
5. Protect customer assets

Source: https://d1.awsstatic.com/case-studies/US/Capital%20One%20Cafe.bb6b7a7a133a573f381e9bb4e6860f68c00fea8c.jpg

PaaS (Platform as a Service)

Case Study: Salesforce

1. Mobile Software Development
2. Rich Developer Environment
3. Fully managed cloud database
4. Point-and-click app building
5. Multi-language development
6. Cloud app marketplace

Source: https://www.salesforce.com/ap/learning-centre/tech/paas/

Source: https://c1.sfdcstatic.com/content/dam/web/en_us/www/images/app-cloud/products-mobile-open-source-applications.jpg

SaaS (Software as a Service)

Case Study: G Suite

1. Third Party Provider
2. Subscription based
3. OS-agnostic
4. Runs its software on its own servers in the cloud,
5. Reduced risk of piracy

Source: https://empireflippers.com/9-saas-examples/

Source: https://images.idgesg.net/images/article/2018/11/g-suite-logos-8-rows-100781657-large.jpg

Cloud Computing

Pros

- Collaboration
- Environment
- Cost
- Ease of use

Cons

- Security
- Data Integrity
- Availability (downtime)
- Privacy & Confidentiality

Source: http://blog.ionixxtech.com/wp-content/uploads/2017/09/Image_1-2.jpg

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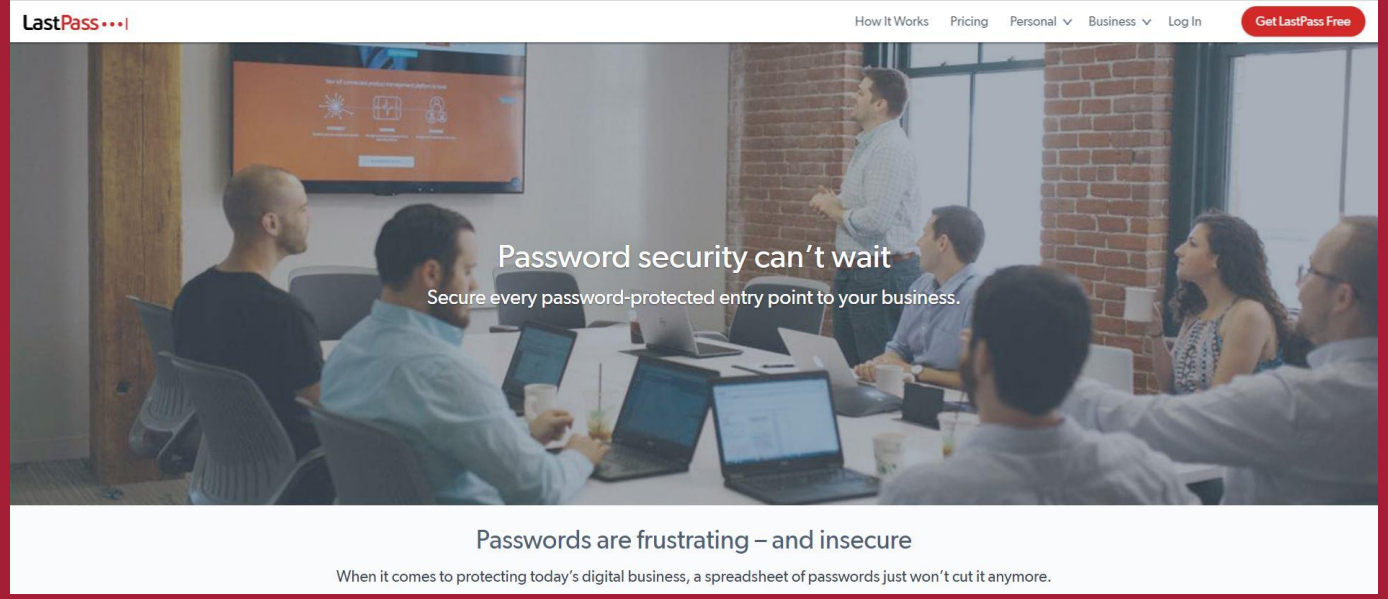
Digital Systems

Cybersecurity & AI

FOX MIS



Cybersecurity Lab

Due by end of day Sunday!

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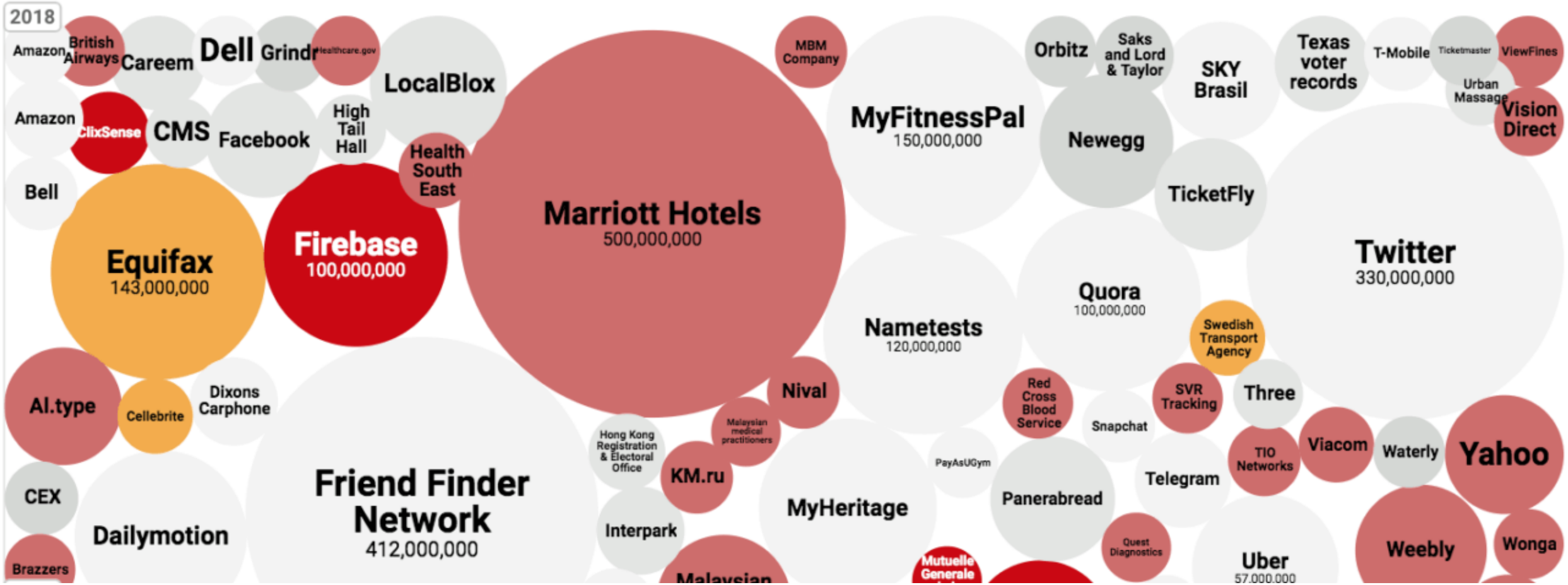
World's Biggest Data Breaches & Hacks



Source: https://www.oyster-ims.com/news/worlds-biggest-data-breaches-hacks

Corporate Hacks

Who was Hacked?

Why should you care?

- SSN
- Credit Cards
- Loans
- Identity

Source: https://grandmutual.com/blog/tips-for-protecting-your-business-from-a-data-breach/

Cybersecurity – Core Fundamentals

Five Questions for threat modeling:

1. What do you want to protect?
2. Who do you want to protect it from?
3. How likely is it that you will need to protect it?
4. How bad are the consequences if you fail?
5. How much trouble are you willing to go through in order to try to prevent those consequences?

Regulations

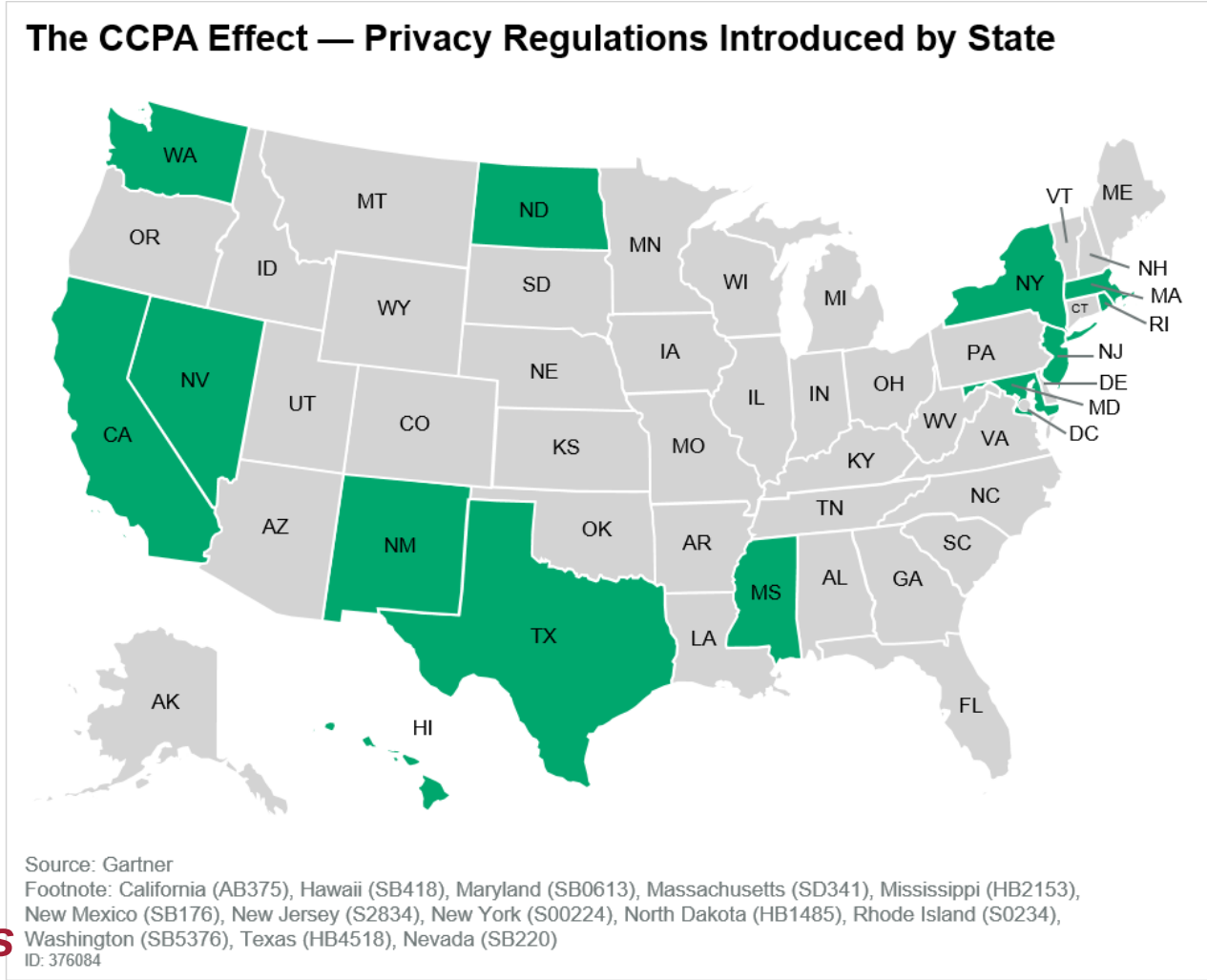
Privacy and Personal Data Protection

California Consumer Privacy Act (CCPA)

Few Federal cybersecurity regulations

- 1996-Health Insurance Portability and Accountability Act (HIPAA)
- 1999-Gramm-Leach-Bliley Act
- 2002 Homeland Security Act, includes
  - Federal Information Security Management Act (FISMA)

IT Professional need to consider regulatory acts when developing systems (example: ERP)!



Source: https://www.gartner.com/resources/376000/376084/376084_0002.png

Case Study

Ransomware forces shutdown

- The incident led to the cancellation of 2,800 patient appointments at the NHS Trust.
- Took 3 days to resolve
- Hospitals are an appealing target for cyberwar…why?

Because Hospital Rely on up-to-date information from patient records

Source: Getty Images/iStockphoto
https://www.zdnet.com/article/ransomware-blamed-for-cyber-attack-which-forced-hospitals-to-cancel-operations-and-shut-down-systems/

Vulnerability

What puts users at risk?

- Forms of malware?
- Who is impacted?
  - Are we safe?
- Can this problem be solved?
  - Combat strategies?

Source: https://www.itweb.co.za/content/KWEBb7yaExK7mRjO

Password Strength

How secure are your passwords?

- Use numbers, letters, and symbols
- Make them as long as possible

Length of Password (Chars)	Only Numbers	Mixed Lower and Upper case alphabets	Mixed numbers, Lower and Upper case aplhabets	Mixed numbers, Lower and Upper case aplhabets , symbols
3	Instantly	Instantly	Instantly	Instantly
4	Instantly	Instantly	Instantly	Instantly
5	Instantly	Instantly	3 secs	10 secs
6	Instantly	8 secs	3 mins	13 mins
7	Instantly	5 mins	3 hours	17 hours
8	Instantly	3 hours	10 days	57 days
9	4 secs	4 days	153 days	12 years
10	40 secs	169 days	1 year	928 years
11	6 mins	16 years	106 years	71k years
12	1 hour	600 years	6k years	5m years
13	11 hours	21k years	108k years	423m years
14	4 days	778k years	25m years	5bn years
15	46 days	28m years	1bn years	2tn years
16	1 year	1bn years	97bn years	193tn years
17	12 years	36bn years	6tn years	14qd years
18	126 years	1tn years	374tn years	1qt years

Source: https://community.isc2.org/t5/Tech-Talk/How-long-does-it-take-to-crack-passwords/td-p/32546

Protection

Considerations

- Antivirus
- Ad blocker
- Avoid dodgy plugins
- Disable macros
- Back-up files
- Don’t just open attachments

Source: https://www.pcmag.com/roundup/256703/the-best-antivirus-protection

Phishing Scams

Case Study

- Google and Facebook targeted
- Lost $100 million

Best Practices

- Careful of any suspicious emails
- Don’t click on random links

Source: https://www.nouveau.co.uk/content-hub/avoidphishing/

Cybersecurity

Hijacking your systems!

- Who borrows flash drives?
- How else do you share data?
- Vectors for Virus & Malware

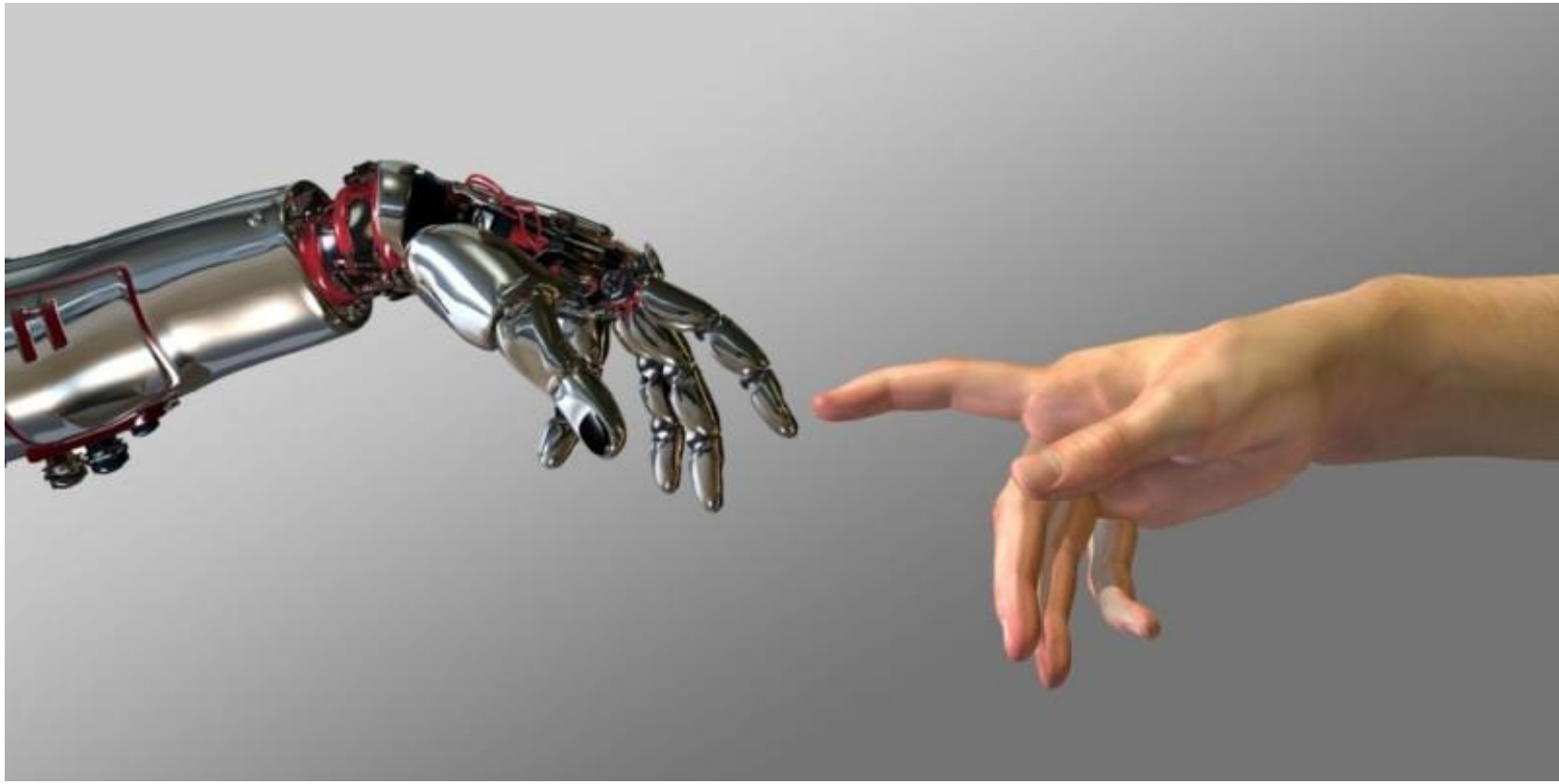
Source: http://www.ommdvd.com/images/services/USB-Pile.jpg

Artificial Intelligence

What is Artificial Intelligence?

Three Types

- Narrow (ANI)
- General (AGI)
- Superintelligence (ASI)



Source: https://matrixni.org/artificial-intelligence-workshop-january-2018-register-now/

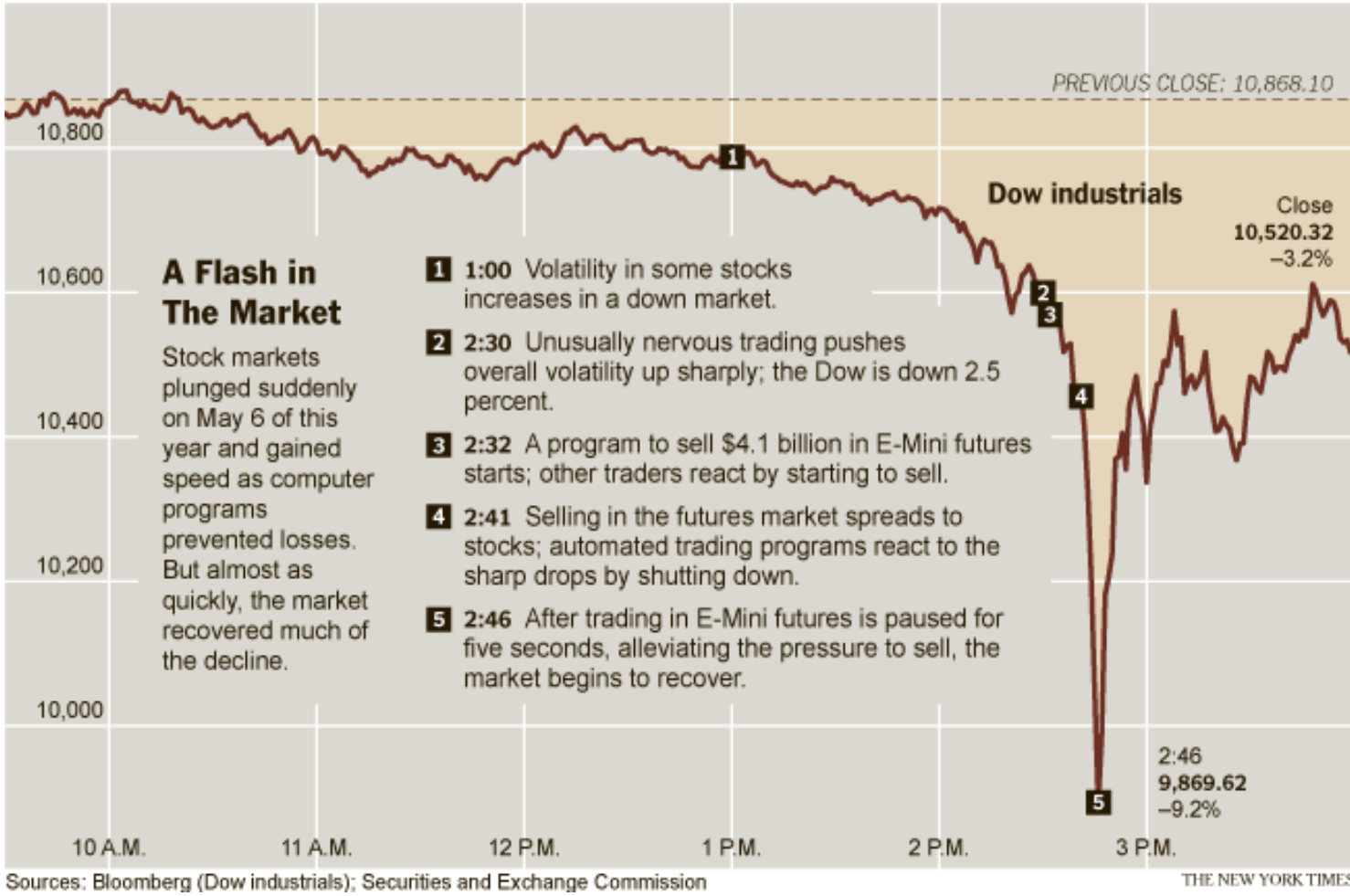
What are the two most likely scenarios with AI?

AI is programmed to do something DEVASTATING
AI is programmed to do something BENEFICIAL,
but it develops a destructive method to achieve its goals

The AI Revolution

2010 Flash Crash

- ANI caused stock market to plummet
- $1 trillion decline in value
- Quick recovery

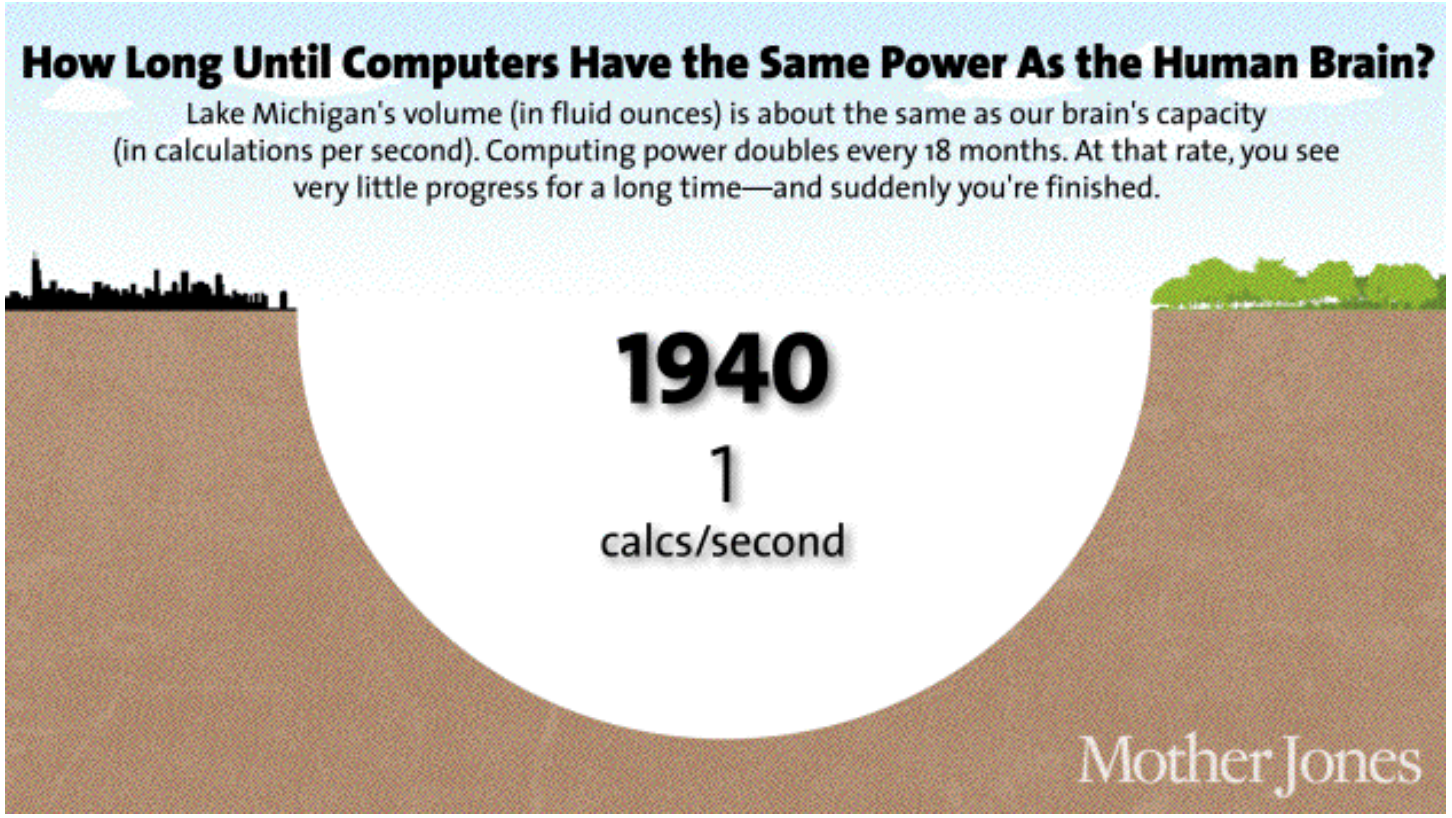


Source: http://graphics8.nytimes.com/images/2010/10/02/business/flash-crash-dow/flash-crash-dow-popup.png

From AGI to ASI

This could happen soon

- Advancements in technology
- Experimentation
- Innovation



Source: https://assets.motherjones.com/media/2013/05/LakeMichigan-Final3.gif

AGI Tests

- The Turing Test
- The Coffee Test
- The College Student Test
- The Employment Test

Source: https://www.newsweek.com/black-mirror-season-4-callister-star-trek-769795

Source: http://robotfacebook.edwindertien.nl/product/ex-machina/

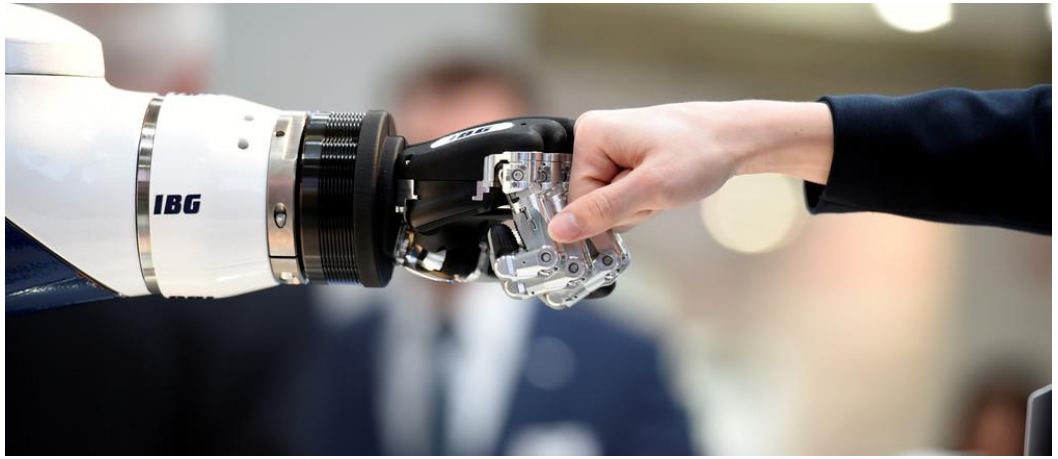
Alan Turing (1912-1954)

- Father of AI and computer science
- Cryptanalyst during WWII
- Cracked code that enabled Allies victory
- Contributions to physical sciences
- Prosecuted by UK and castrated for being gay
- Died of cyanide poisoning
- Receives public apology in 2009 & royal pardon in 2013

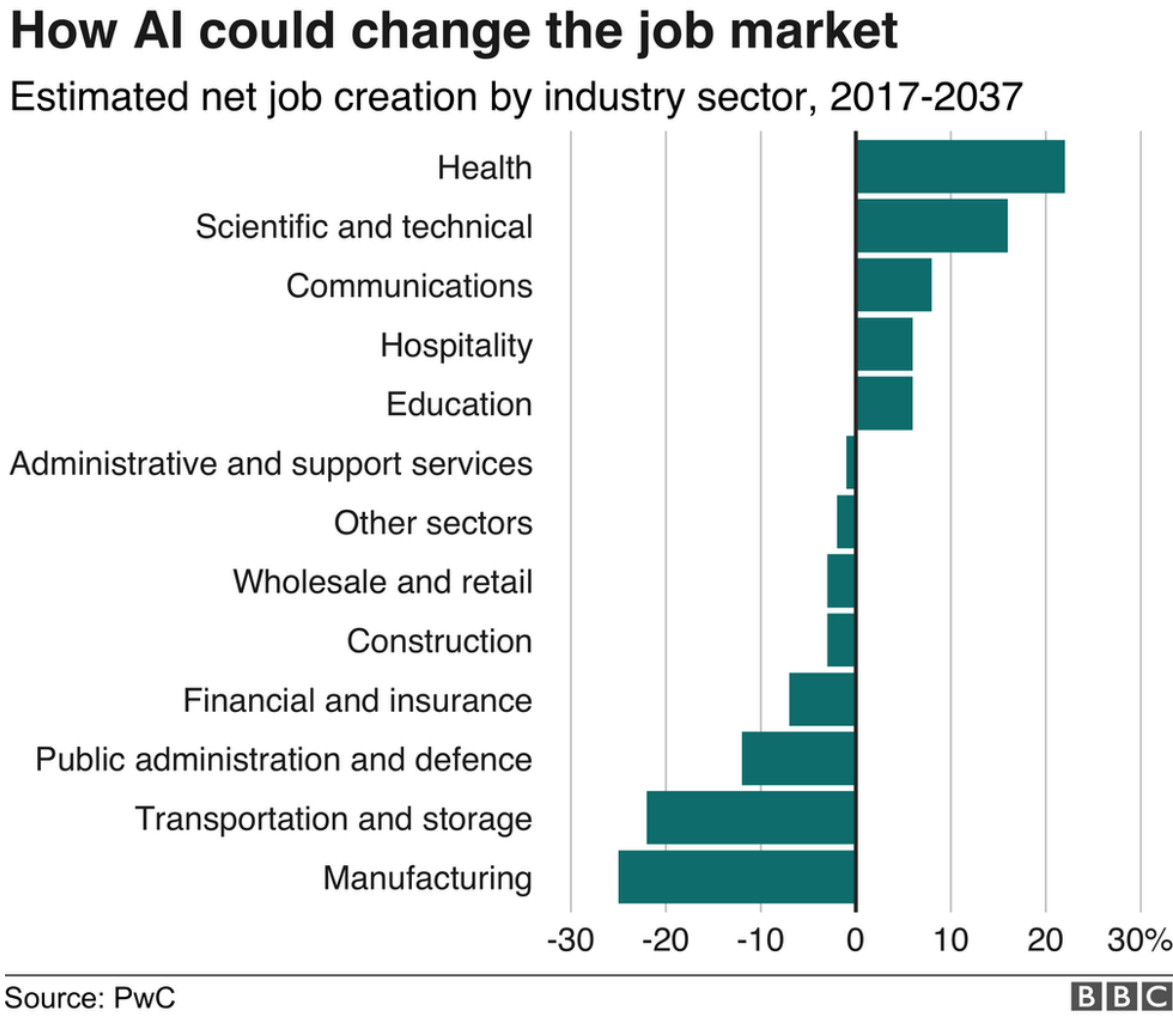
Source: https://www.historyextra.com/period/second-world-war/bletchley-park-facts-alan-turing/

The Future…

What will the job market look like when you graduate?



Source: https://www.weforum.org/agenda/2018/06/ai-arms-race-global-collaboration/



Source: https://www.bbc.com/news/business-44849492

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Digital Systems

The Turning Test and Mitsuku
In-Class Activity

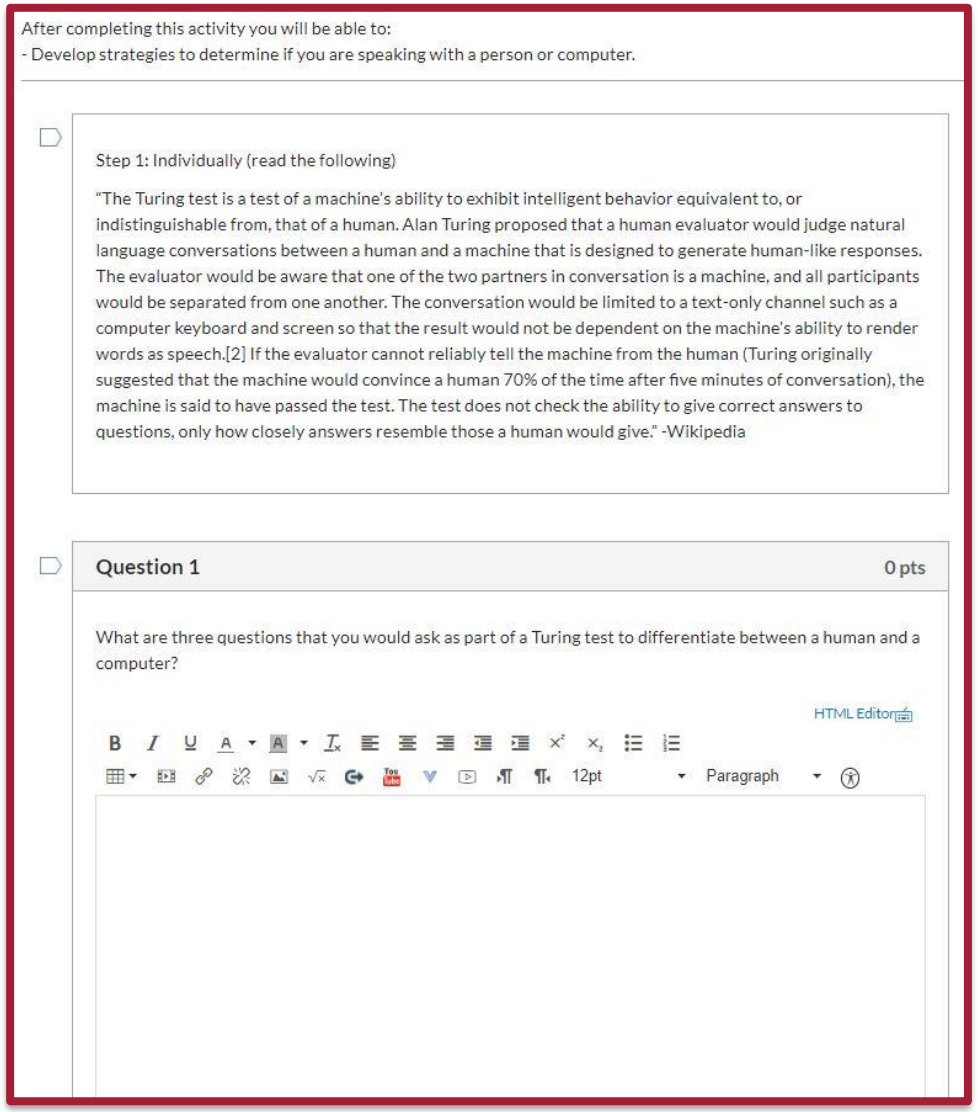
FOX
MIS

The Turing Test and Mitsuku

- **What?**
  - **Develop strategies to differentiate a person from a computer**
  - **Test these strategies with a chatbot to see how they work**
  - **Refine these strategies and try and actual Turning Test and determine if you are interacting with a person impersonating a computer or a computer impersonating a person**
- **Why?**
  - **See for yourself how far AI has come**
  - **Get you thinking about the implications on business and your career**

Step #1

- **Individually read the description of what a Turing test is.**
- **What are three questions that you would ask as part of a Turing test to differentiate between a human and a computer?**
- **Record these questions in Canvas**


After completing this activity you will be able to:
- Develop strategies to determine if you are speaking with a person or computer.

Step 1: Individually (read the following)

"The Turing test is a test of a machine's ability to exhibit intelligent behavior equivalent to, or indistinguishable from, that of a human. Alan Turing proposed that a human evaluator would judge natural language conversations between a human and a machine that is designed to generate human-like responses. The evaluator would be aware that one of the two partners in conversation is a machine, and all participants would be separated from one another. The conversation would be limited to a text-only channel such as a computer keyboard and screen so that the result would not be dependent on the machine's ability to render words as speech.[2] If the evaluator cannot reliably tell the machine from the human (Turing originally suggested that the machine would convince a human 70% of the time after five minutes of conversation), the machine is said to have passed the test. The test does not check the ability to give correct answers to questions, only how closely answers resemble those a human would give." -Wikipedia

Question 1 0 pts

What are three questions that you would ask as part of a Turing test to differentiate between a human and a computer?

HTML Editor

12pt Paragraph

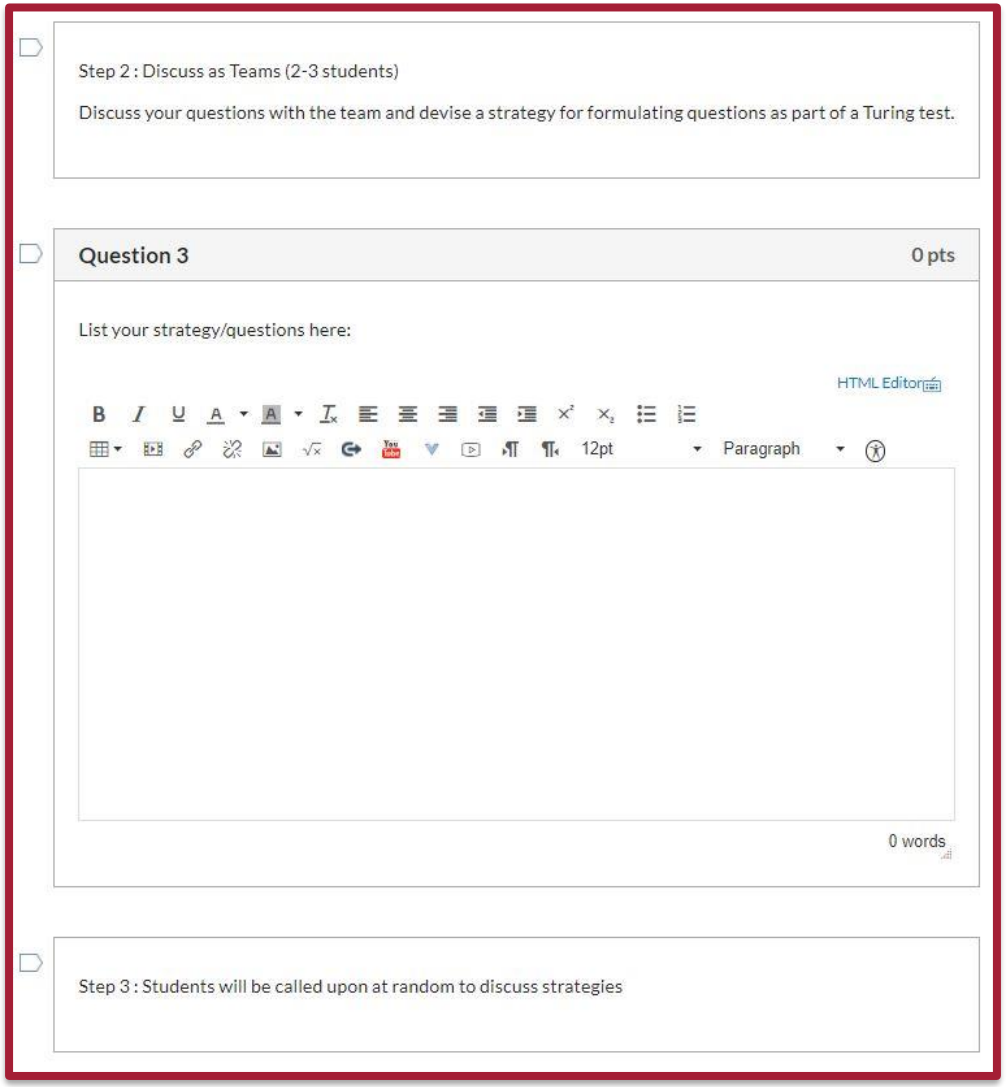
Step #2

- **Students will be called upon at random to discuss their strategies and questions**

Source: https://i1.wp.com/www.nationalreview.com/wp-content/uploads/2016/12/school-bans-students-raising-their-hands-answer-questions-2.jpg?fit=788%2C460&ssl=1

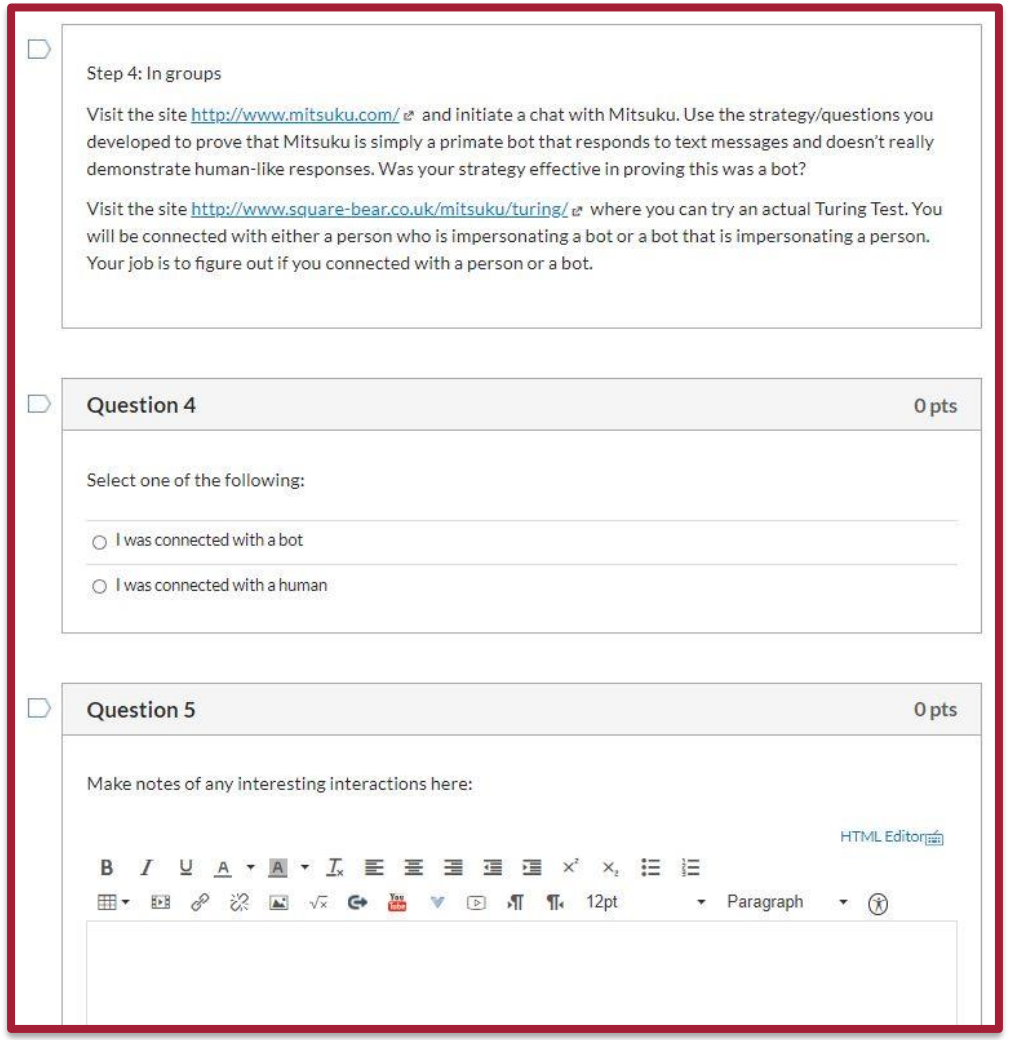
Step #3

- Visit the site http://www.mitsuku.com
- Mitsuku is a primitive chatbot that responds to text messages.
- Test your strategies to prove that Mitsuku is just a bot.
- Individually record any interesting interactions with Mitsuku in Canvas



Step #4

- Visit http://www.square-bear.co.uk/mitsuku/turing/ where you can try an actual Turing test
- You will be connected to either a person or a computer that is impersonating a person
- Your job is to figure out if you connected with a person or a bot
- Record if you were connected with a bot or a person in the Google form
- Record any interesting interactions in Canvas



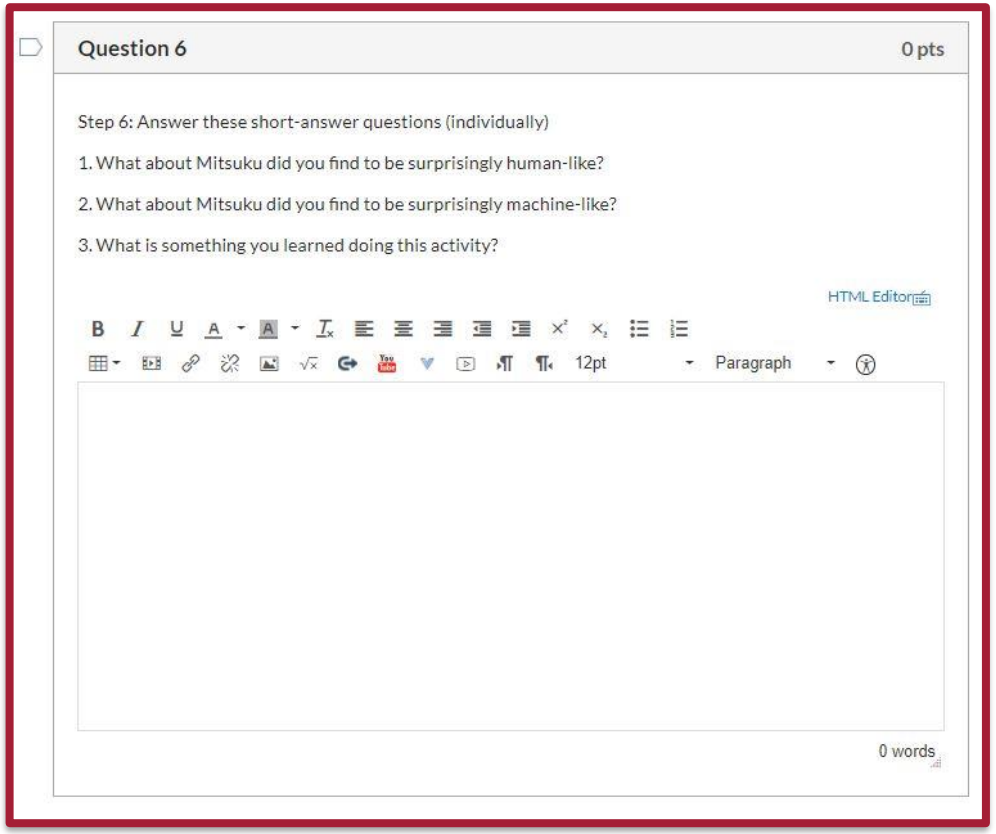
Step #5

- **Students will be called upon at random to comment on any interesting interactions and to discuss if they were connected to a bot or a person**

Source: https://www.ppic.org/wp-content/uploads/student-raising-hand-in-classroom.jpg

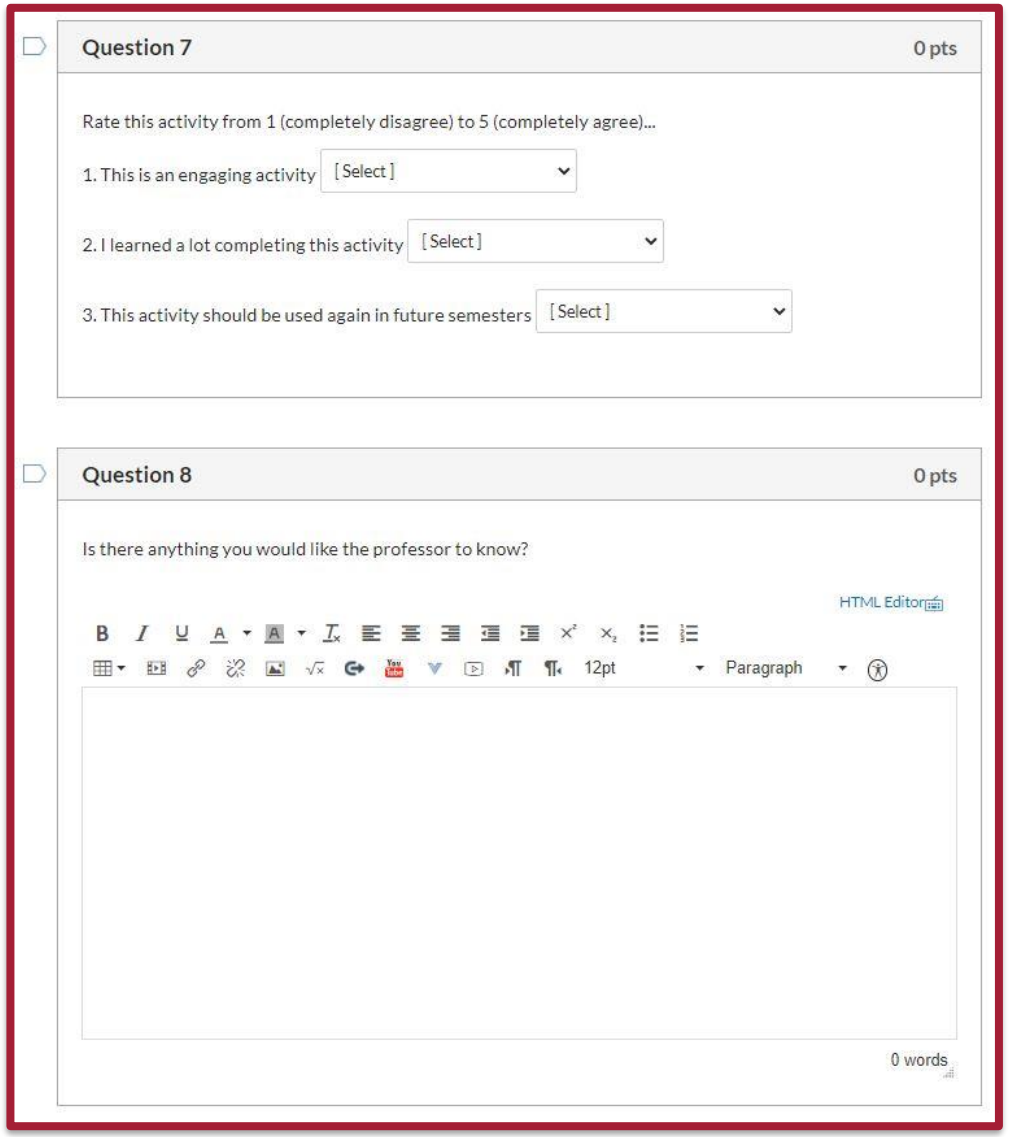
Step #6

- **Answer the following three short-answer questions**
  - **What about Mitsuku did you find to be surprisingly human like?**
  - **What about Mitsuku did you find to be surprisingly machine like?**
  - **What is something you learned by completing this activity?**
- **Record your answers in Canvas**



Step #7

- **Rate this activity using Canvas**



Exam 2 prep discussion

More to Come

Prepare with Readings & Videos before our next class!!!