Week 2-2
UX and Usability

SFWRENG 4HC3/6HC3 Human Computer Interfaces

** Slides adapted from previous instructors of COMPSCI/SFWRENG 4HC3/6HC3*

McMaster University

Review Question

Scenario:

Imagine a user is shopping on an e-commerce website (e.g., Amazon). They add several items to their shopping cart and proceed to the checkout process. However, when they attempt to complete the purchase, they encounter an error message that says, "Transaction failed due to an issue."

Is this a scenario of Gulf of Execution or Gulf of Evaluation?

Gulf of Execution & Evaluation

A **Gulf of Execution** arises when the **user** has difficulties **providing instructions** that are executable **by the system**

A **Gulf of Evaluation** arises when the **user** has trouble **interpreting system output** in light of their goals

Review Question

Scenario:

Imagine a user is shopping on an e-commerce website (e.g., Amazon). They add several items to their shopping cart and proceed to the checkout process. However, when they attempt to complete the purchase, they encounter an error message that says, "Transaction failed due to **an issue**."

The goal is **not** achieved
But can user **evaluate** how much progress they made?

Practice: **Computer Desktop Design**

Assume a MacOS user who has never used Windows before, and wants to clean up their Desktop in Windows

1. Use Stages of Action to analyze the user's interaction with the system
2. With the stages of action, think about how does the current design of the desktop interface minimize the gulfs?

Week 2 Goals

- Monday
  - ~~Interface and Interaction~~
- **Wednesday**
  - **Usability and UX**
    - **Usability Goals**
    - **UX Goals**
- Friday
  - Design Principles: Part 1

Usability Goals

Example:

Designing a drawing tool for creatives that promotes **efficiency** and **creativity**.

Usability Goals

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These primary objectives are referred as **usability** goals and **user experience** goals

A **user experience goal** is concerned with the quality of the user's experience with the system

A **usability goal** addresses the issue of meeting a specific usability criteria

Usability Goals

Designing user interactions requires **identifying important usability goals** for the system

Common usability goals:

- Effectiveness
- Efficiency
- Safety
- Utility
- Learnability
- Memorability

Usability Goals

Designing user interactions requires **identifying important usability goals** for the system

Parts of a system may have different goals:

- Accounting routines (efficient, safe)
- Scheduling routine (memorable)

Common usability goals:

- Effectiveness
- Efficiency
- Safety
- Utility
- Learnability
- Memorability

Usability Goals

Each **usability goal** is typically **operationalized** as a question

Usability criteria refers to something that can be measured to determine if **the goal** is being met

e.g., Efficiency - task completion time

A more concrete way for a designer to tell if they are meeting the goal

Usability Goals

Common goals: Effectiveness, Efficiency, Safety, Utility, Learnability, Memorability

They are not necessarily **obvious** in the design process:

- Needs explicit consideration, or it gets glossed over
- How do you measure it? Don’t rely on “common sense”
- You often need to make trade-offs

Usability Goals: **Effectiveness**

Most general goal,
Concerned with **whether the system is doing** what it generally says it will do

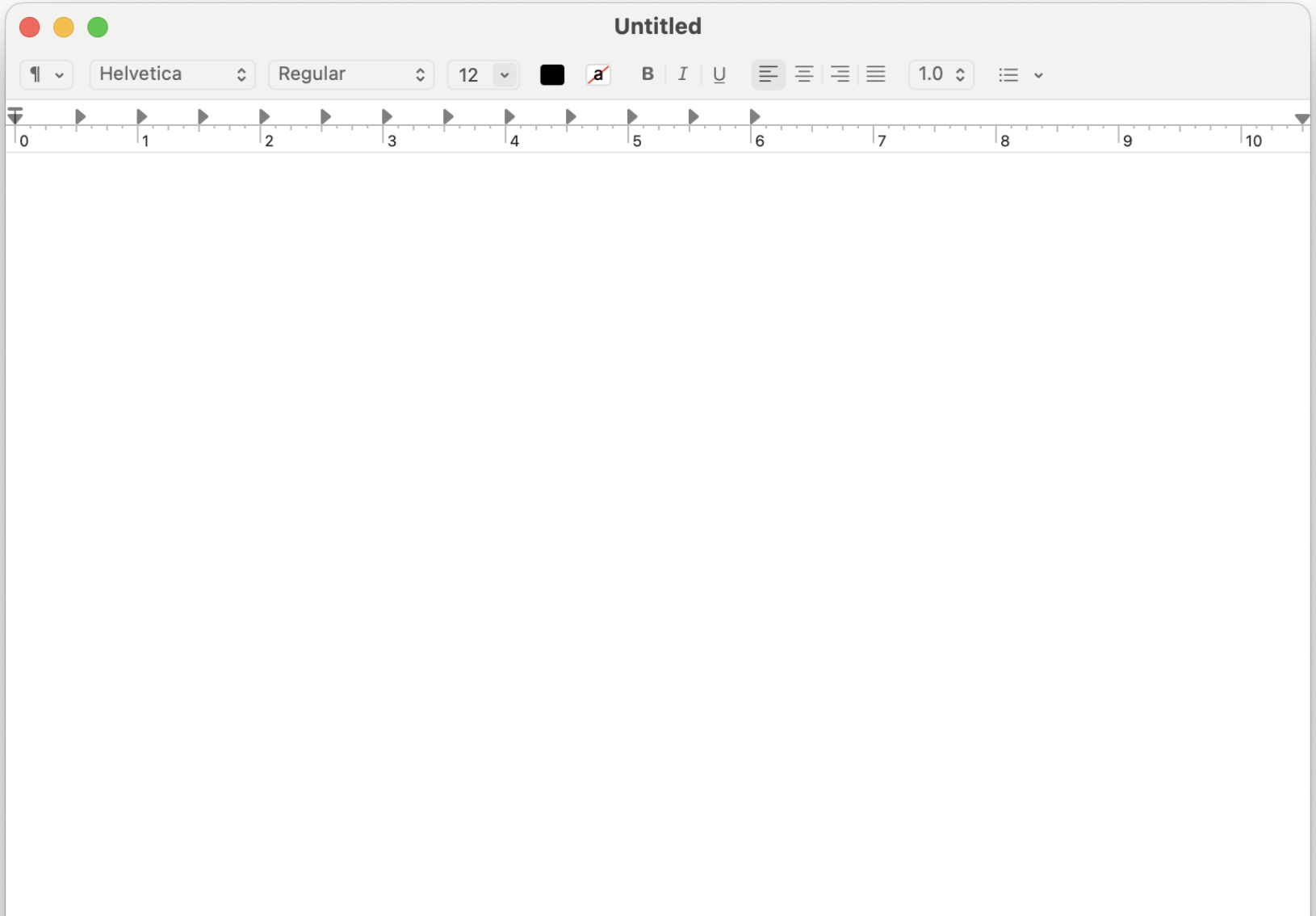
Example:

- Word processor
- E-commerce system

Question:
is the system doing what it is supposed to do?

Criteria:
degree to which user's goals were met successfully by the system

Effectiveness: Example #1



Usability Goal: **Efficiency**

Considers **how much time** it will take users to perform their tasks

Generally the **more steps** it takes to carry out a task, the less efficient a system is

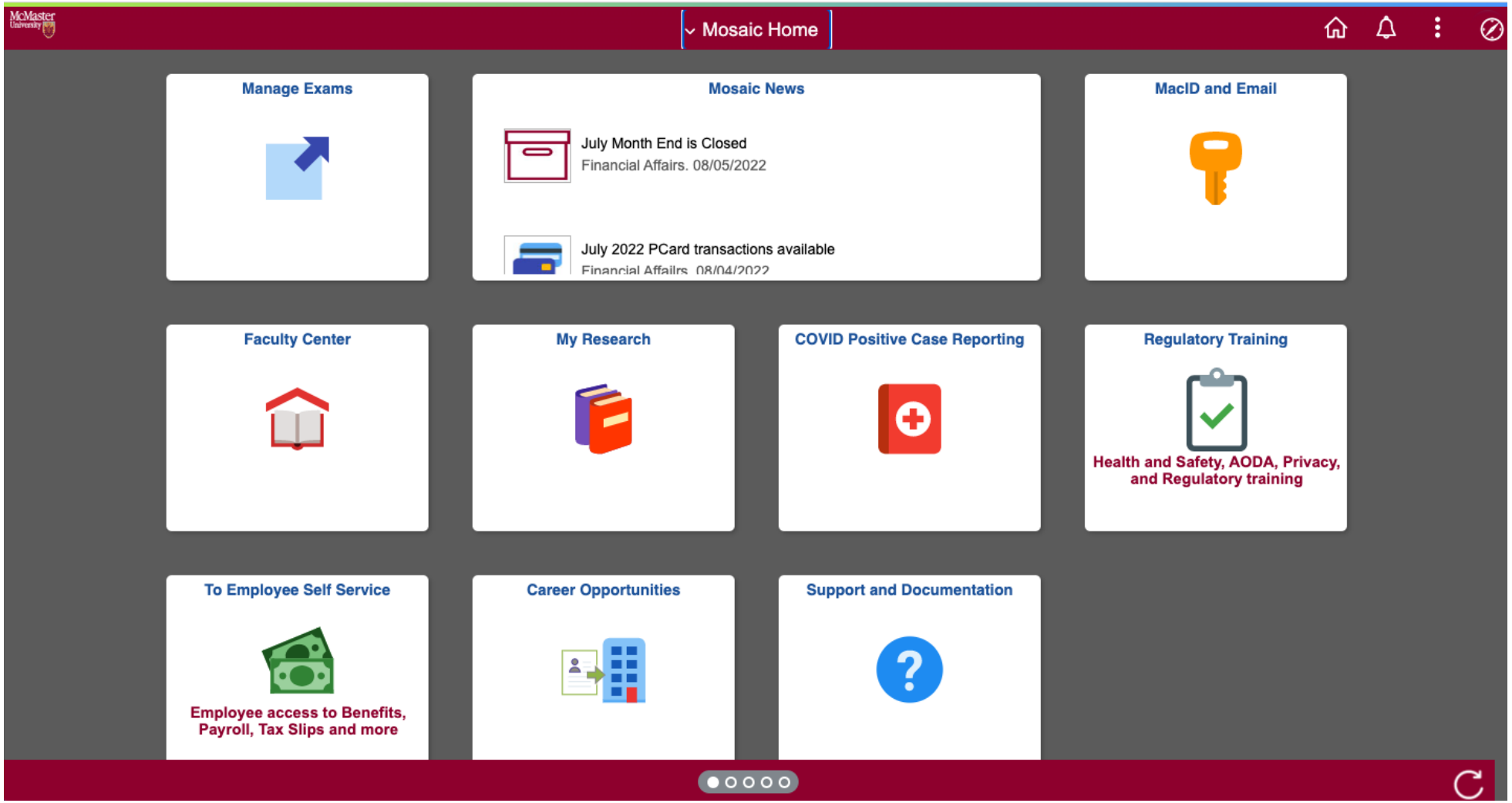
Example:

- Visual Voice mail
- Amazon e-commerce

Question:
is the user saving time/being productive with the system?

Criteria:
time to complete a task; # of operations to complete a task

Efficiency: Example #2



Usability Goal: **Safety**

Does the system…

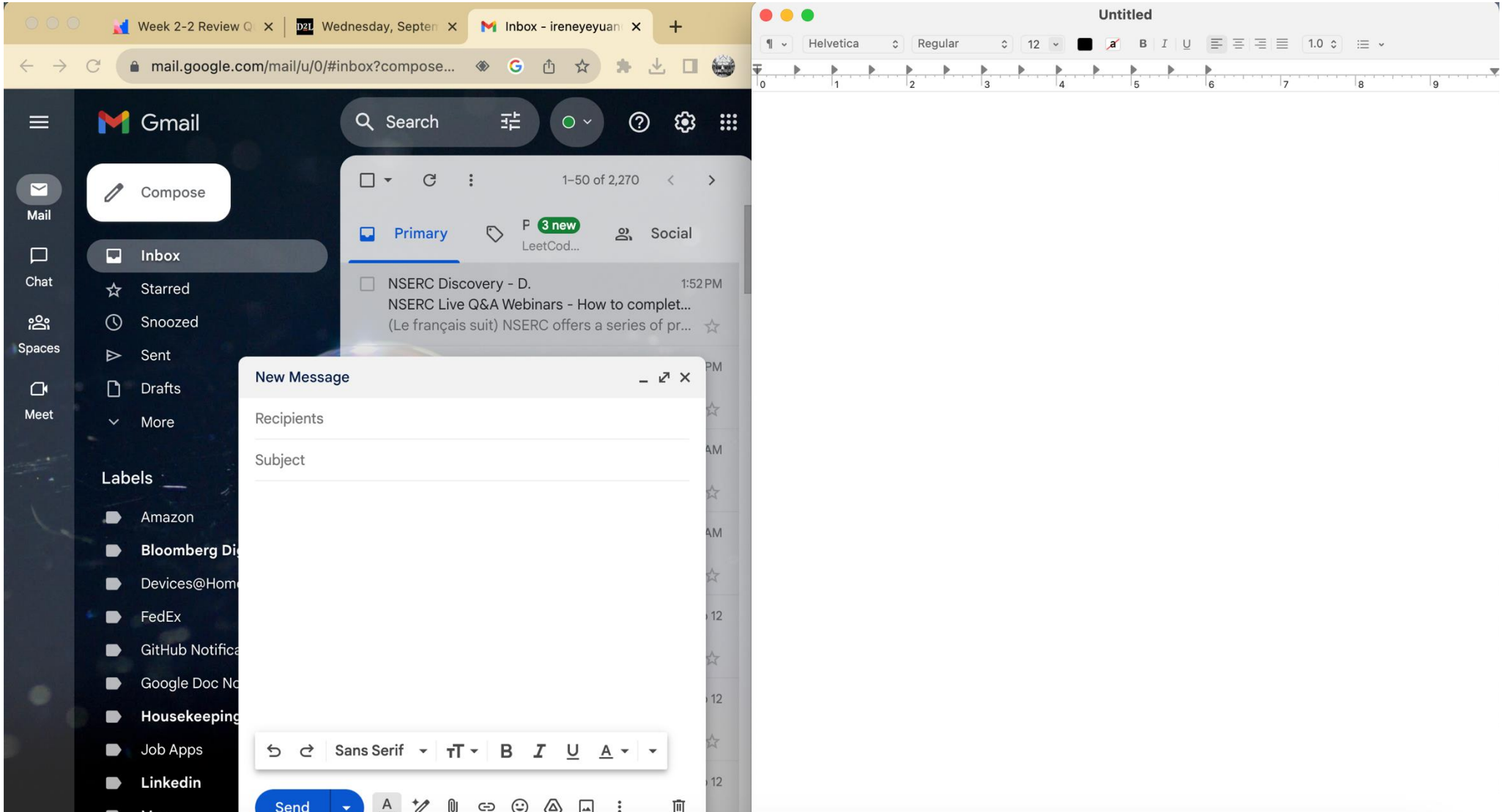
- **prevent** you from making serious/unrecoverable errors?
- **provide** means of recovering from errors?
  - e.g., undo options, confirmation dialogs
- **protect** users from dangerous and undesirable conditions?

Example:
Sending and recall a message

Question:
Does it prevent users from making/recovering from serious errors?
Does it jeopardize the well-being of the user or others?

Criteria:
number of errors/time to recover from errors

Safety: Example #3



Usability Goal: **Utility**

Provide sufficient functionality to accommodate range of users' tasks, without complex workarounds or hacks

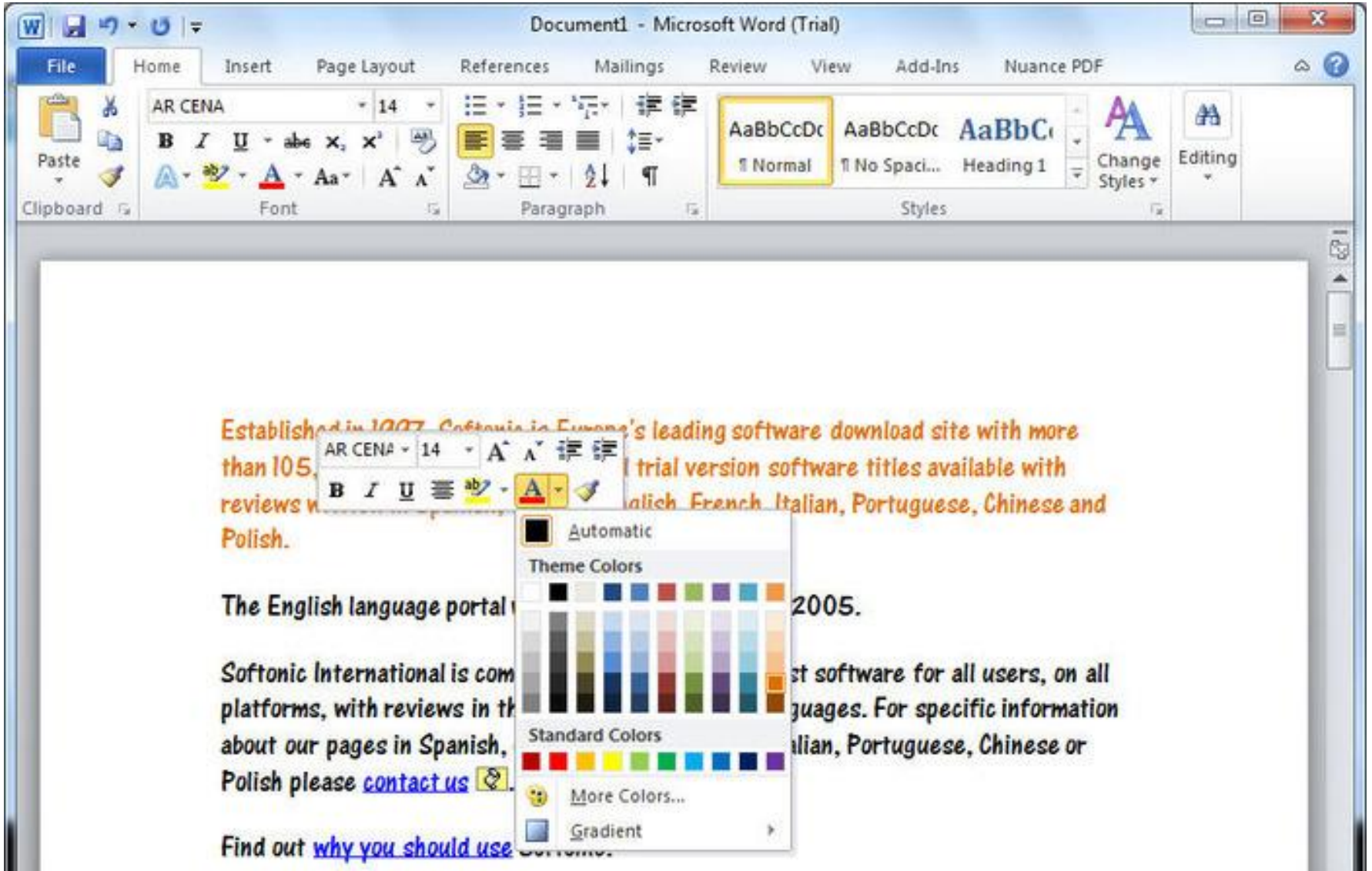
Will the system provide sufficient fluidity to cover tasks as performed?

Example:
- Accounting packages
- Drawing tools

Question:
Does it provide sufficient functionality for users to carry out tasks as naturally as possible?

Criteria:
availability of core tasks

Utility: Example #4



Usability Goal: **Learnability**

How easy is the system to learn?

Need to identify how much time users are willing to spend to learn the system

Example:

- iPhone
- AutoCAD

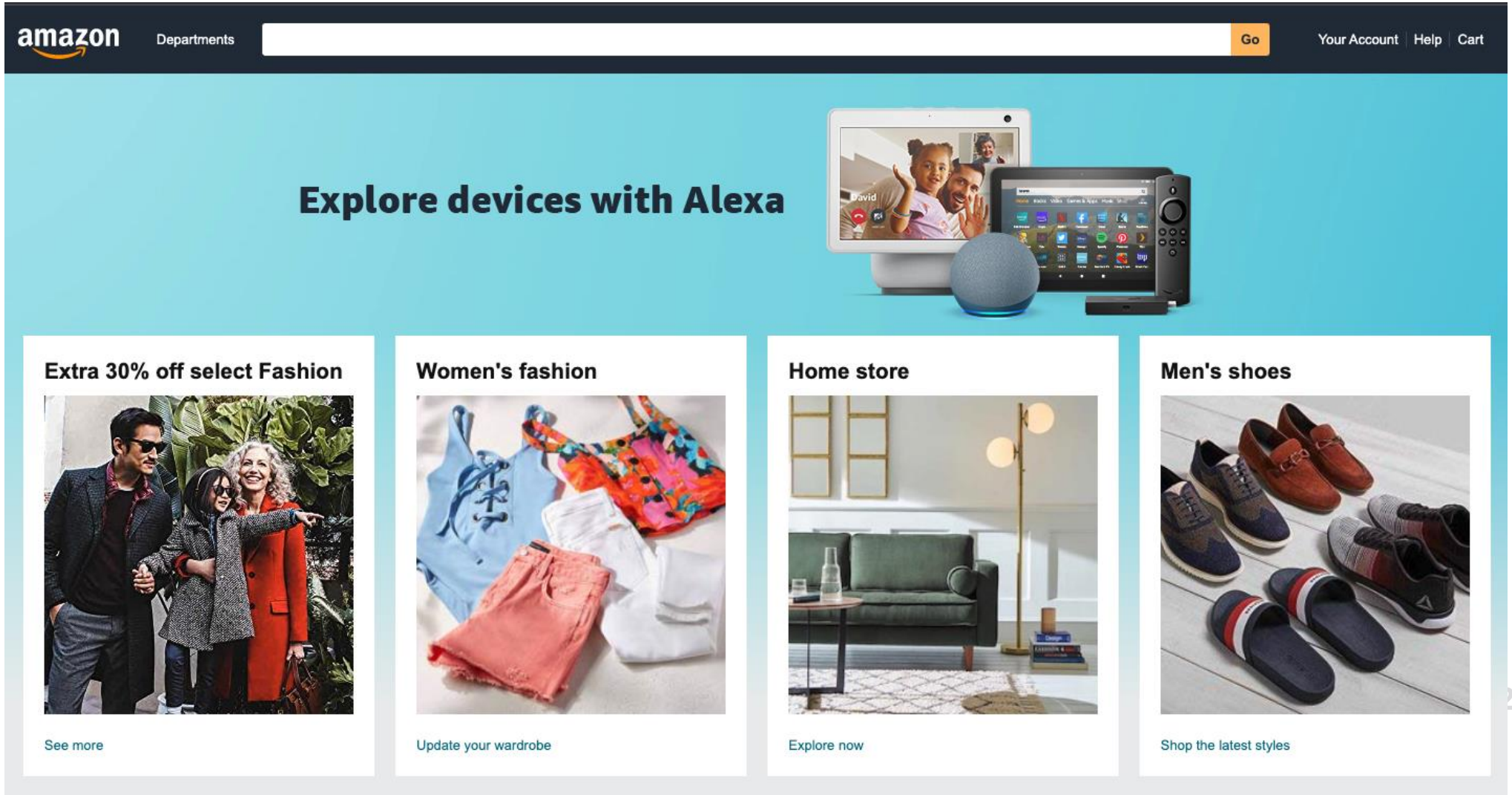
Question:

can primary (core) and secondary tasks be learned quickly and easily?

Criteria:

time to learn a task, errors made in learning a task

Learnability: Example #5



Usability Goal: **Memorability**

Once learned, **how easy** is the system to remember?

- Particularly important if system will be used infrequently
- Can users remember how to use the system (with the aids of appropriately designed icons, command groupings, etc.)

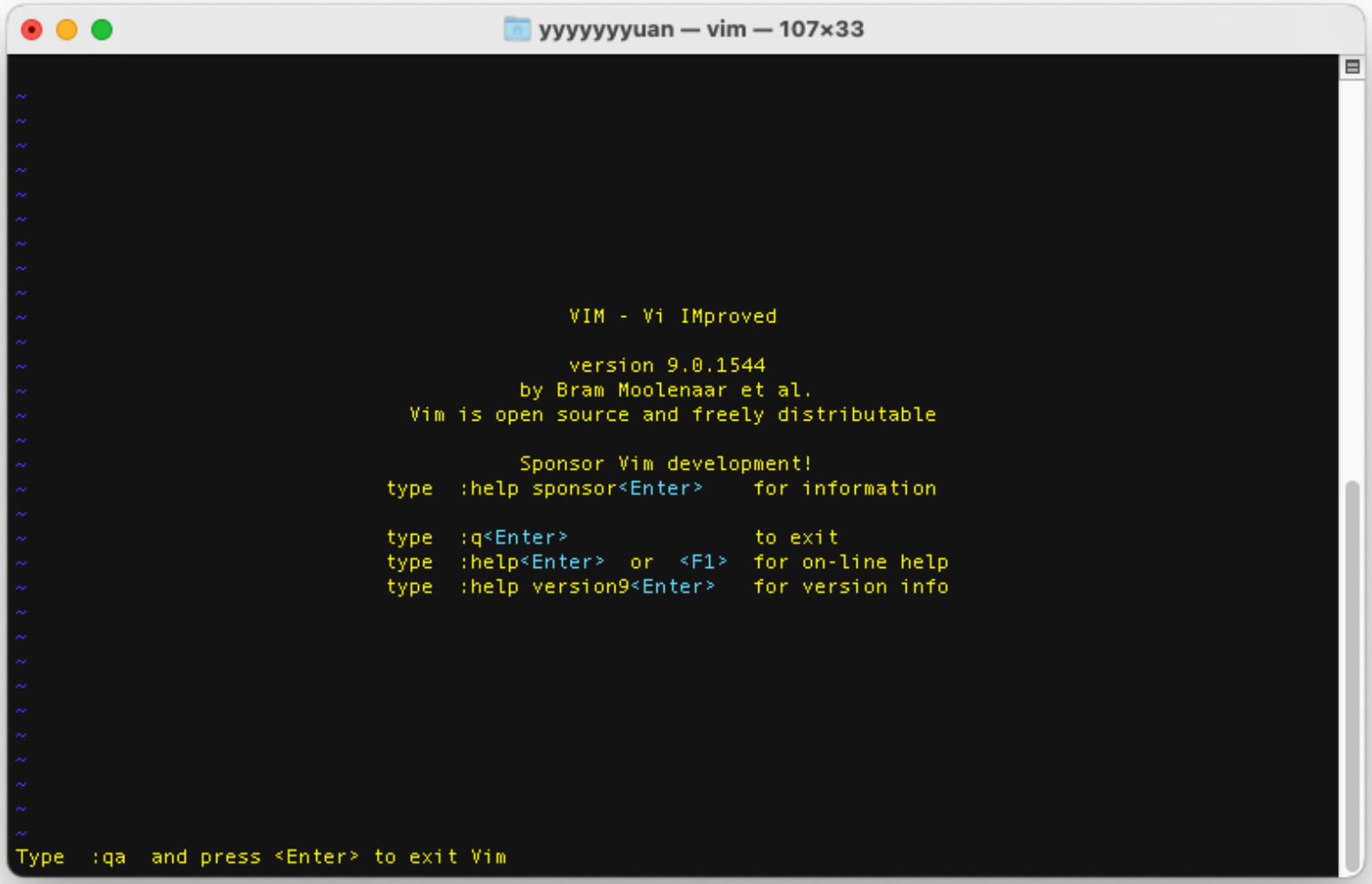
Example:

- interface of digital camera

Question:
will users remember all the steps to carrying out a task?

Criteria:
errors made in carrying out a task after system is learned

Memorability: Example #6



Quick Discussion

Pair up and take 3 minutes to discuss these examples:

How long should it take to **learn** to use the following products? How long does it actually **take**? How **memorable** are they?

a) Using a DVD/Blu-ray to watch a movie

b) Using an authoring tool to create a simple website

c) Setting up a wireless router

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User Experience Goals

One goal could be to build systems that are **more than usable**

That also enhance the user's experience

User experience goals relate to how the user **feels** using the system

User Experience Goals

While **usability** is mostly about being able to do things

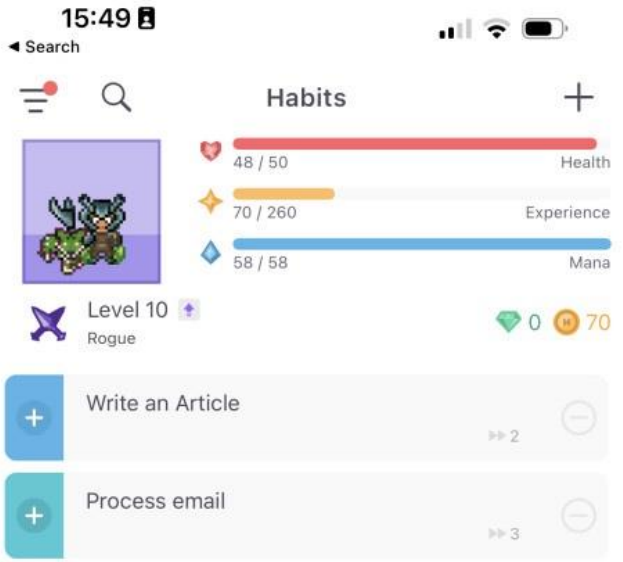
But, humans have emotions and mental states

- boredeom
- frustration
- anger
- engagement
- etc

These also impact **how successful** an interface is

User Experience Goals Examples

- **Satisfying** – feel good using the system
  - e.g., productive
- **Motivating** – did not feel like giving up
  - e.g., gamification
- **Enjoyable** – fun, lack of frustrations
  - e.g., software for boring things like taxes
- **Aesthetically pleasing** – good visual design
  - e.g., nice to look at, design facilitates use
- **Fun**
  - e.g., excited about using it again



User Experience Goals Examples

- **Supports creativity** – varied ways of doing tasks
- **Entertaining** – keeps your attention
- **Rewarding** – feel better while using it
- **Helpful** – clueless but still made it through
- **Emotionally fulfilling** – evokes positive emotions

Usability vs. UX Goals

Do these two sets of goals overlap?

YES, they are tightly intertwined:

- Something that is **fun** to use is more **learnable**
- Something that is **frustrating** may lead to more **errors**
- Something that does not s**upport creativity** may not be **productive**

Practice Examples

What are the **key usability and user experience goals** of these systems?

1. an **Internet application** that allows the general public to access their medical records
2. a **CAD system** for architects and engineers
3. an **online community to support** people who are facing various long-term health conditions (e.g., cancer treatment)

Example #1

an Internet application that allows the general public to access their medical records

Usability
- Effectiveness
- Efficiency
- Safety
- Utility
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User experience
- Satisfying
- Motivating
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Example #1

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Example #2

a CAD system for architects and engineers

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Practice

an online community to support people who are facing various long-term health conditions (e.g., cancer treatment)

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