



Embedded Ethics:

CSC207 (module 1)
User Diversity

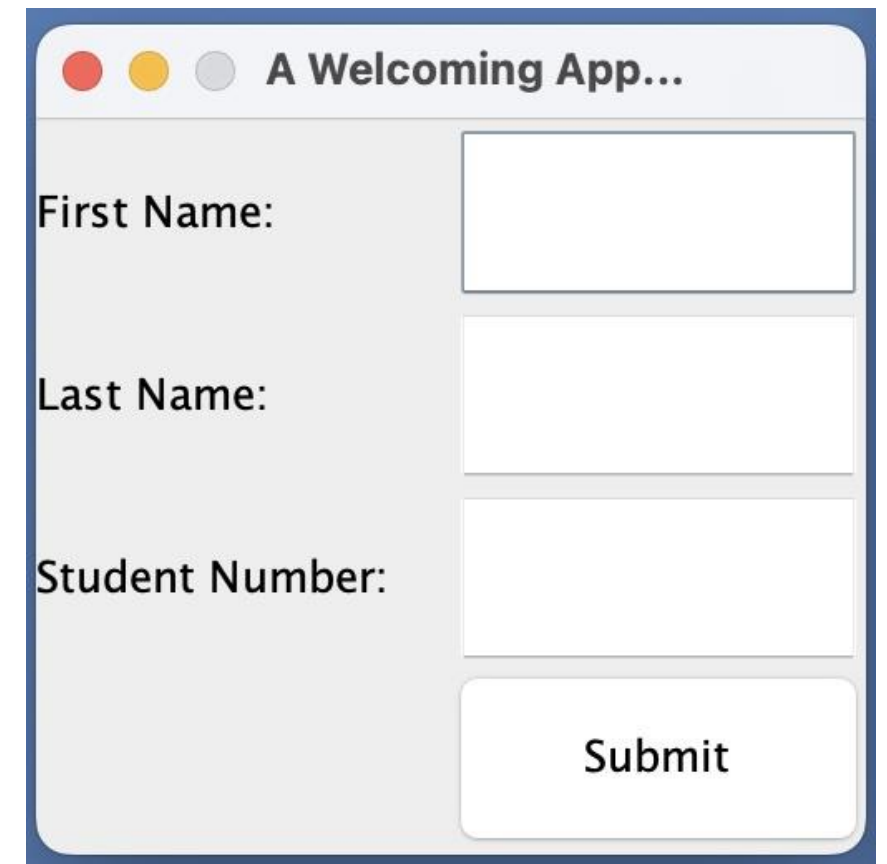
In-Class Activity

Download the jar file from this week's lecture materials page and drag it into any open IntelliJ project.

Right-click and Run the program. Try entering your name and student number to see what happens.

Try other names and values to see what happens to identify problems with the program.

Who would be affected by the problems you identify?



A Java Swing window titled "A Welcoming App..." with a standard macOS-style title bar (red, yellow, and grey buttons). The window contains three text input fields stacked vertically, each preceded by a label: "First Name:", "Last Name:", and "Student Number:". Below these fields is a single "Submit" button.

Software designers often
assume that their user is...



Software designers often
assume that their user is...

Like **themselves**



Software designers often
assume that their user is...

Like **themselves**

Or

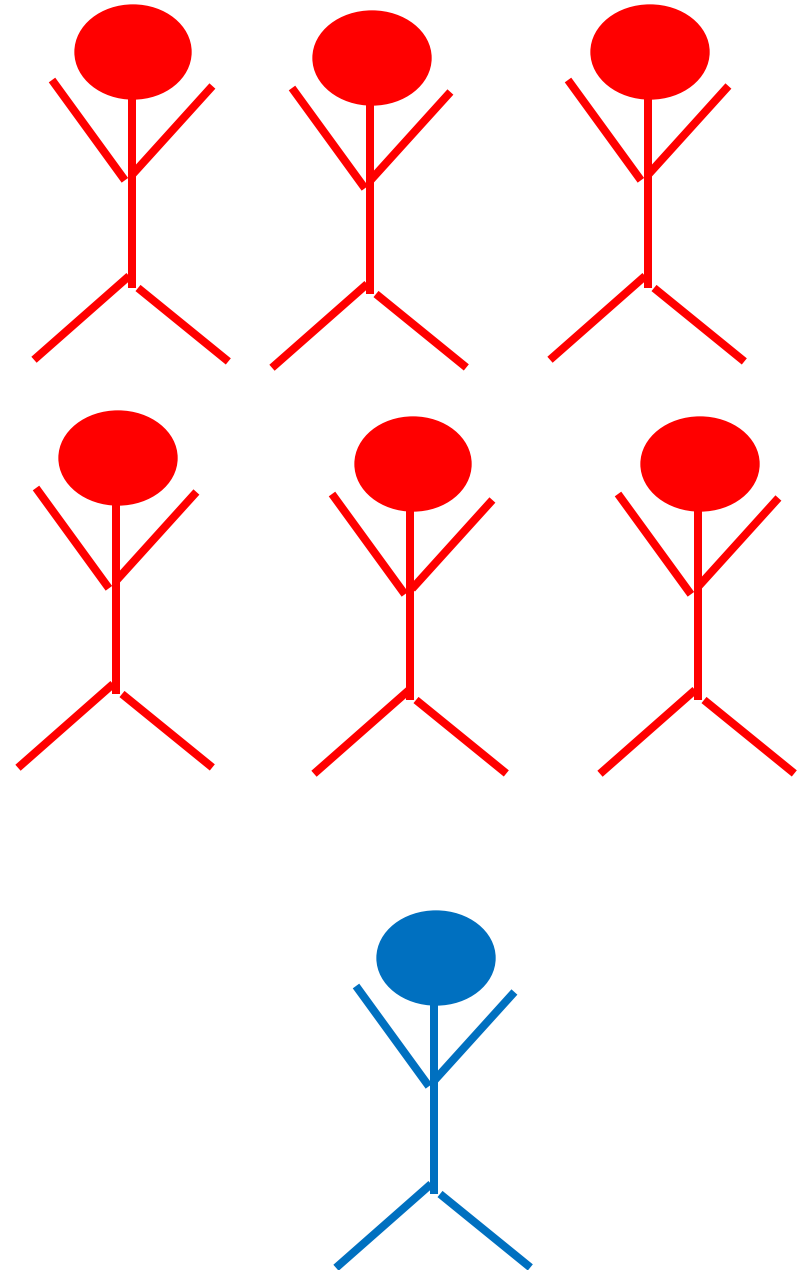


Software designers often
assume that their user is...

Like **themselves**

Or

A member of the **majority**



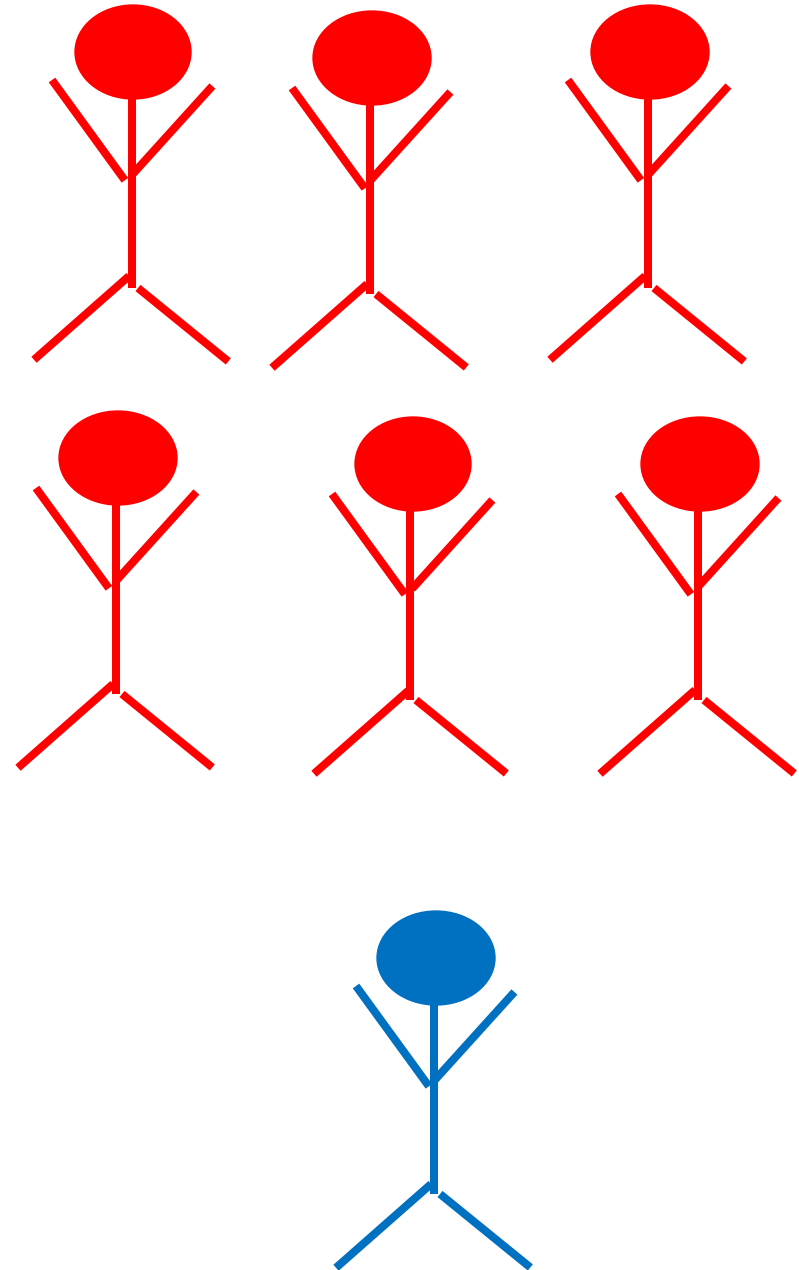
Software designers often
assume that their user is...

Like **themselves**

Or

A member of the **majority**

And this leads them to
design products that don't
work as well for the minority.





Group A:
Apple Users



Group B:
Android Users



Group A:
Apple Users



Group B:
Android Users

Guess: What percentage of Canadians are in each category?



Group A:
Apple Users 60%



Group B:
Android Users 40%



Suppose you are designing an application for Apple users.

What are some reasons that you might port the code to Android, even though Android users are in the minority?

What are some reasons that you wouldn't port the code to Android?



Group A:
Young and Middle-
aged Users 80%



Group B:
Elderly Users 20%



What are some difficulties that elderly users might face in accessing an app designed for younger users?



Group A:
Young and Middle-
aged Users 80%



Group B:
Elderly Users 20%



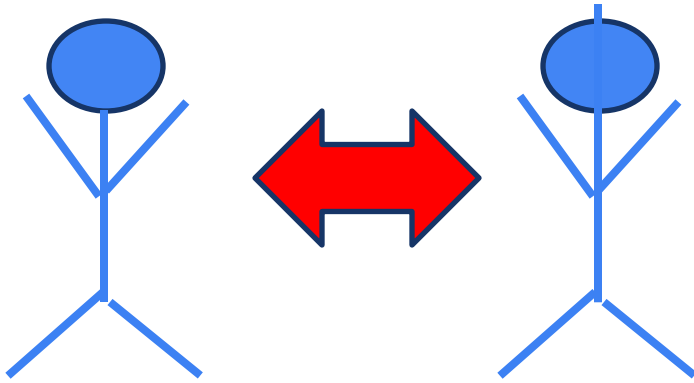
Remember the reasons you pointed out to make a port for Android users.

Are there any **additional** reasons to make the app accessible for elderly users?

Elderly users are often more **vulnerable** than younger users.

They may suffer more **tangible harm** than others without access to an app – loss of happiness, health, freedom, opportunities, etc.





Philosopher Elizabeth Anderson talks about the idea of **relational equality** or **democratic equality**: being able to relate to someone as an equal

Not about tangible things, but *status*.





What can make someone feel less than equal to others?

When you design an app that works for Apple users, but not Android users....

..... you usually don't communicate that Android users are less than equal to Apple users.



When you design an app that works for young and middle-aged users, but not elderly users....

.... you usually communicate that elderly users are less than equal to other users.





It's not just age!

Many other characteristics are connected to relational harm...

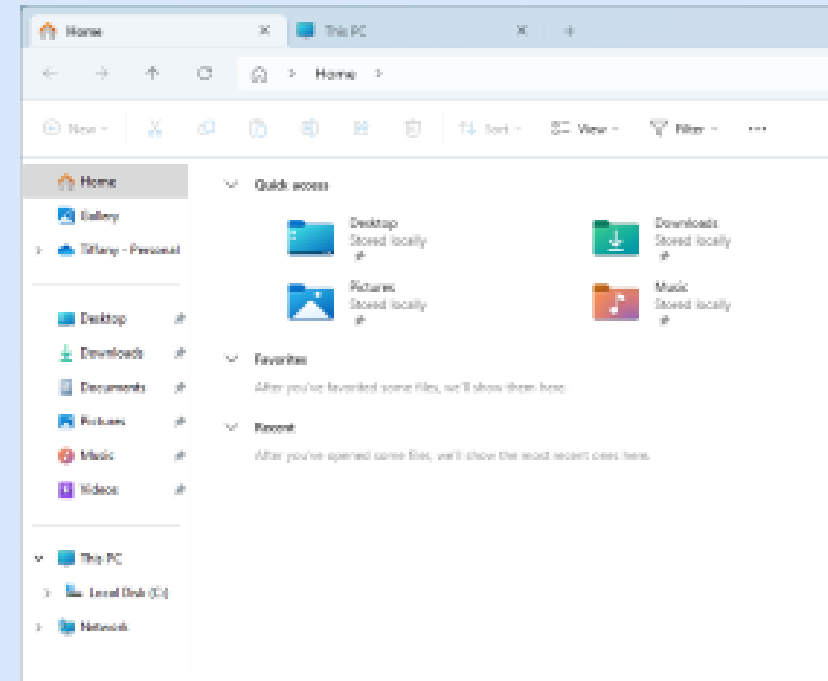
e.g. gender, race, sexuality, class

So it is important to design in a way that is inclusive of these characteristics.

Compare the following interfaces to a file system:

```
/dev/sda3 /
mars@marsmain /usr/portage/app-shells/bash $ date
Sat Aug  8 02:42:24 MSD 2009
mars@marsmain /usr/portage/app-shells/bash $ lsmod
Module                Size  Used by
rndis_wlan             23424  0
rndis_host             8696   1 rndis_wlan
cdc_ether              5672   1 rndis_host
usbnet                18688   3 rndis_wlan,rndis_host,cdc
parport_pc            38424   0
fglrx                 2388128 20
parport               39648   1 parport_pc
iTCO_wdt              12272   0
i2c_i801              9380   0
mars@marsmain /usr/portage/app-shells/bash $
```

BASH: a text interface to a file system



Windows File Explorer: a graphical interface to a file system

Who are some users who would have difficulty with both systems (without further assistance)?

Who are some users that may have more difficulty with BASH than File Explorer?

Who are some users that may have more difficulty with File Explorer than BASH?

Which of these users might be caused relational harm if you designed without keeping them in mind?



The main lesson of this module is that it is important to imagine a diverse range of users when designing an application: by failing to do this, you can cause tangible and relational harm.

An especially important way in which users differ from one another is disability.

In module 2, we will talk about disability and how to design with disability in mind.

Acknowledgements

This module was created as part of the Embedded Ethics Education Initiative (E3I), a joint project between the Department of Computer Science¹ and the Schwartz Reisman Institute for Technology and Society², in association with the Department of Philosophy³, University of Toronto.

Module Development:

Philosophy: Steve Coyne^{1,3}

Computer Science: Lindsey Shorser¹, Jonathan Calver¹, Paul Gries¹,
Yasaman Rohanifar

E3I Leadership Team:

Steve Coyne^{1,3}, Diane Horton¹, David Liu¹, and Sheila McIlraith^{1,2}



References

- Anderson, Elizabeth. 1999. “What is the Point of Equality?” *Ethics* 109(2): 287-337