Leibniz Universität Hannover

Programmieren 1

Auditorium Exercise 4

Human-Computer Interaction Group

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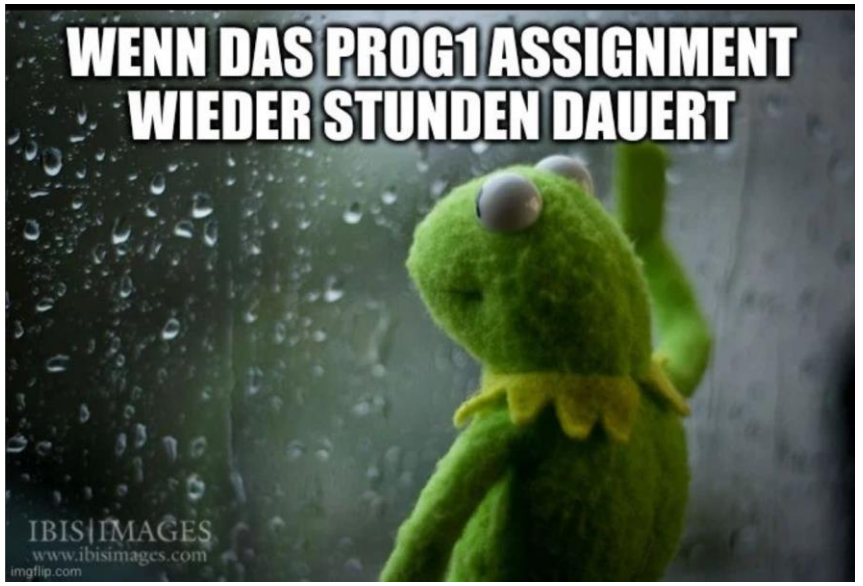
Organisatorisches: Online Sprechstunden

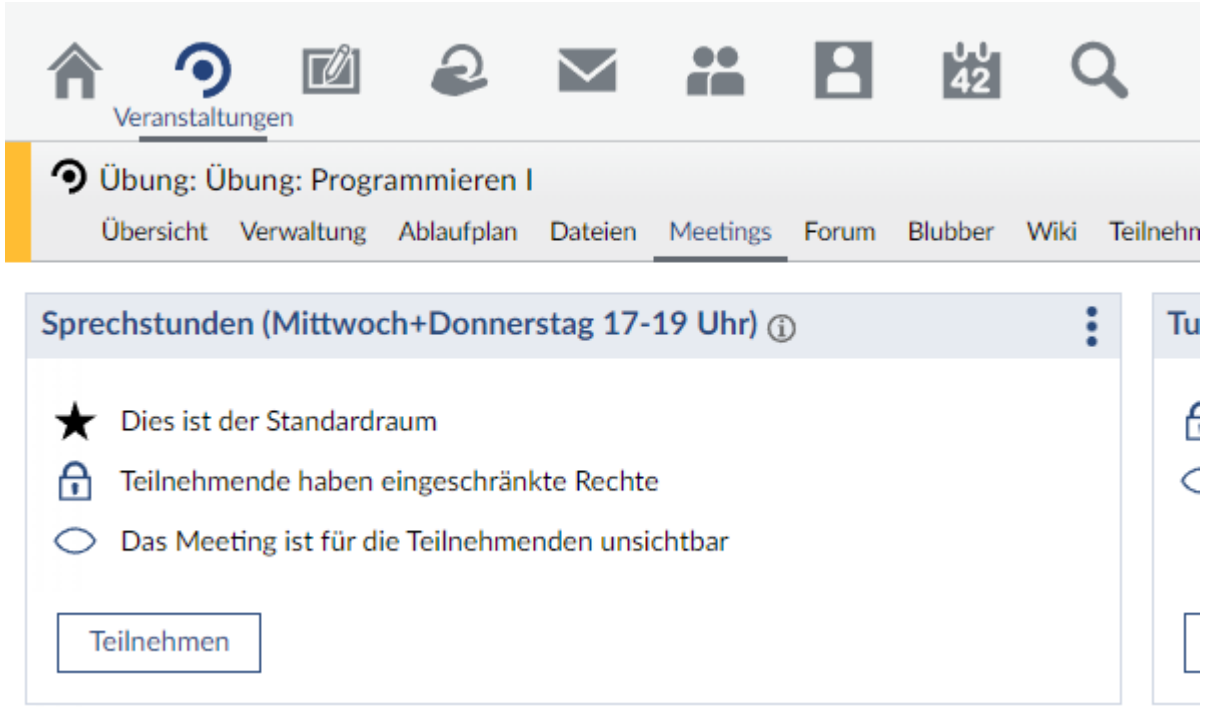
- Ähnlich zur LernLounge
  - Individuelle Hilfe bei Problemen mit Übungsaufgaben
  - Aufzeigen von Ansätzen
  - Keine Herausgabe von Lösungen

- Mittwochs 17:00-19:00
- Donnerstags 17:00-19:00



instagram.com/memespostfix

Online Sprechstunden



Organisatorische Fragen?

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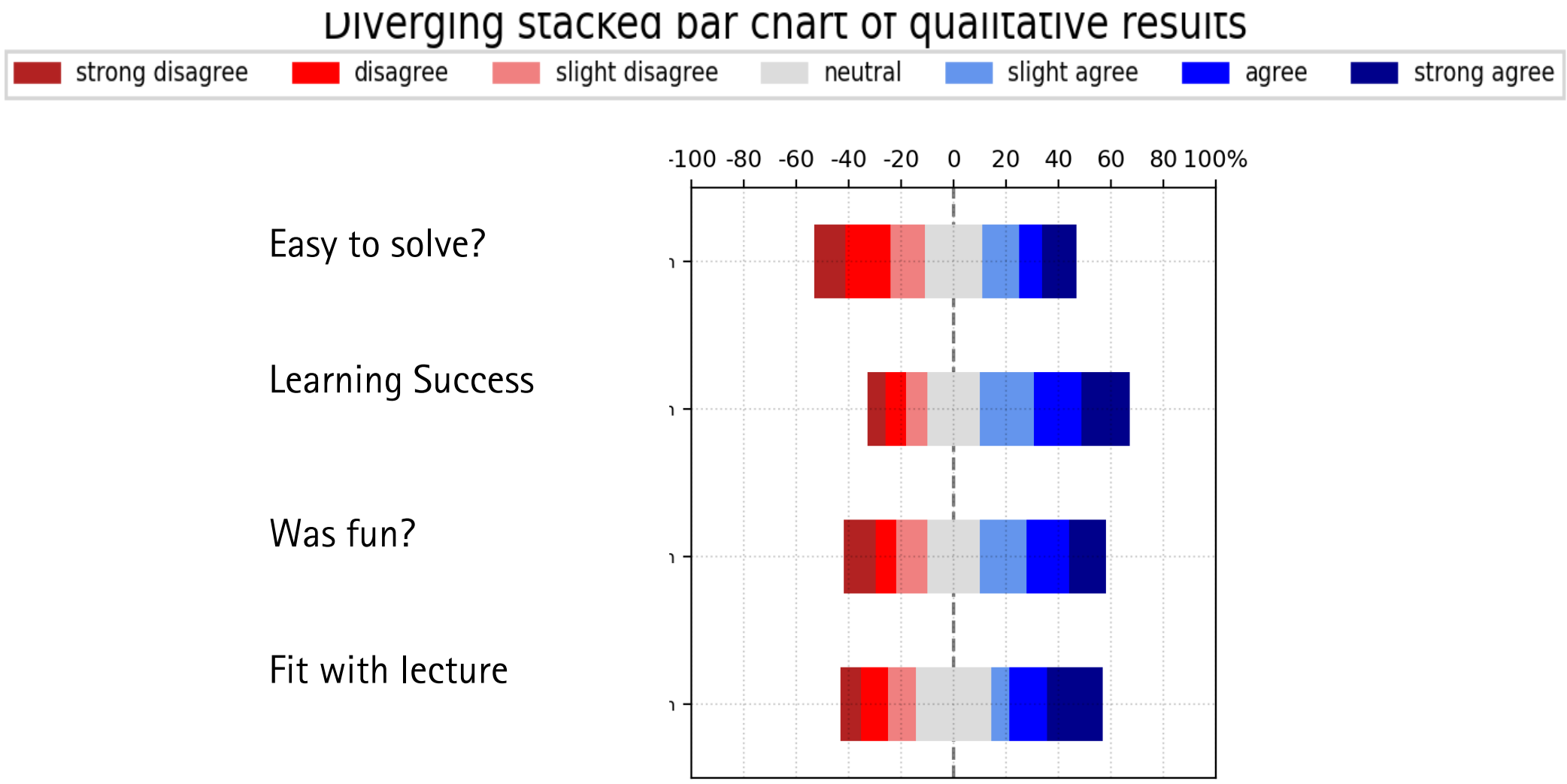
ASSIGNMENT 3

Feedback – Assignment 3



Assignment 3

- Task 4a

```
bid: (auction :Obj, bidder :Str, offer :Num -> :Obj ){
    {auction int? auction str? or}{auction}
    {auction 1 get bidder =}{auction}
    {auction 0 get offer >=}{auction}
    {true}{[offer bidder auction 2 get]}
}cond-fun
```

Assignment 3

- Task 4b

```
update-auction:(auction :Obj, time :Int -> :Obj){
    { auction str? } {auction} #auction ended
    { {{auction int?} {auction time <=}} and } {  #start auction
        [START-OFFER "" time AUCTION-TIME +]
    }
    { {{auction arr?}{auction .2  time <=}} and }{ #auction ended
        auction 1 get
    }
    {true}{auction}
}cond-fun
```

Assignment 4

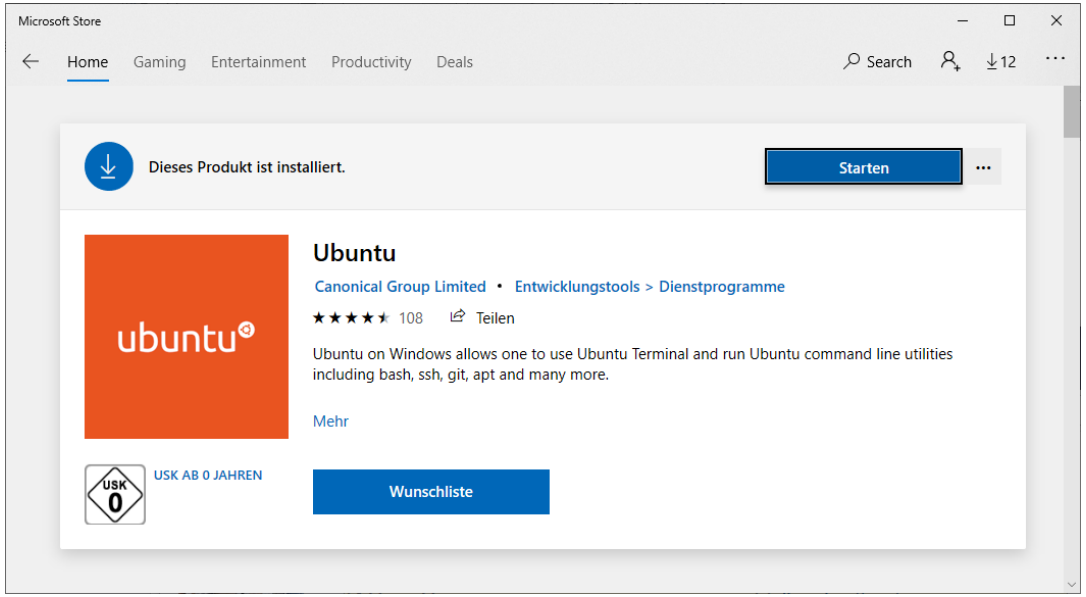
- Already available on StudIP
- We will have a brief look inside now

C

Organizational

- Install a C Compiler (see next slides)
- On Windows use the Linux Subsystem for Windows
- Alternatively use MSYS2 to have a Unix-like Shell and tools

- Exercises as usual



Setting up the C compiler

- We'll use the GCC compiler for all C exercises
- Available on:
  - Windows (via MSYS2)
  - Mac OSX (via Xcode)
  - GNU/Linux

- **We won't use an IDE!**
- Instead: pick your text editor of choice
- Recommended text editors:
  - Windows: Notepad++
  - MacOS: Sublime Text
  - Linux: Kate

Linux: Ubuntu

- gcc is part of the build-essential package
- To install:

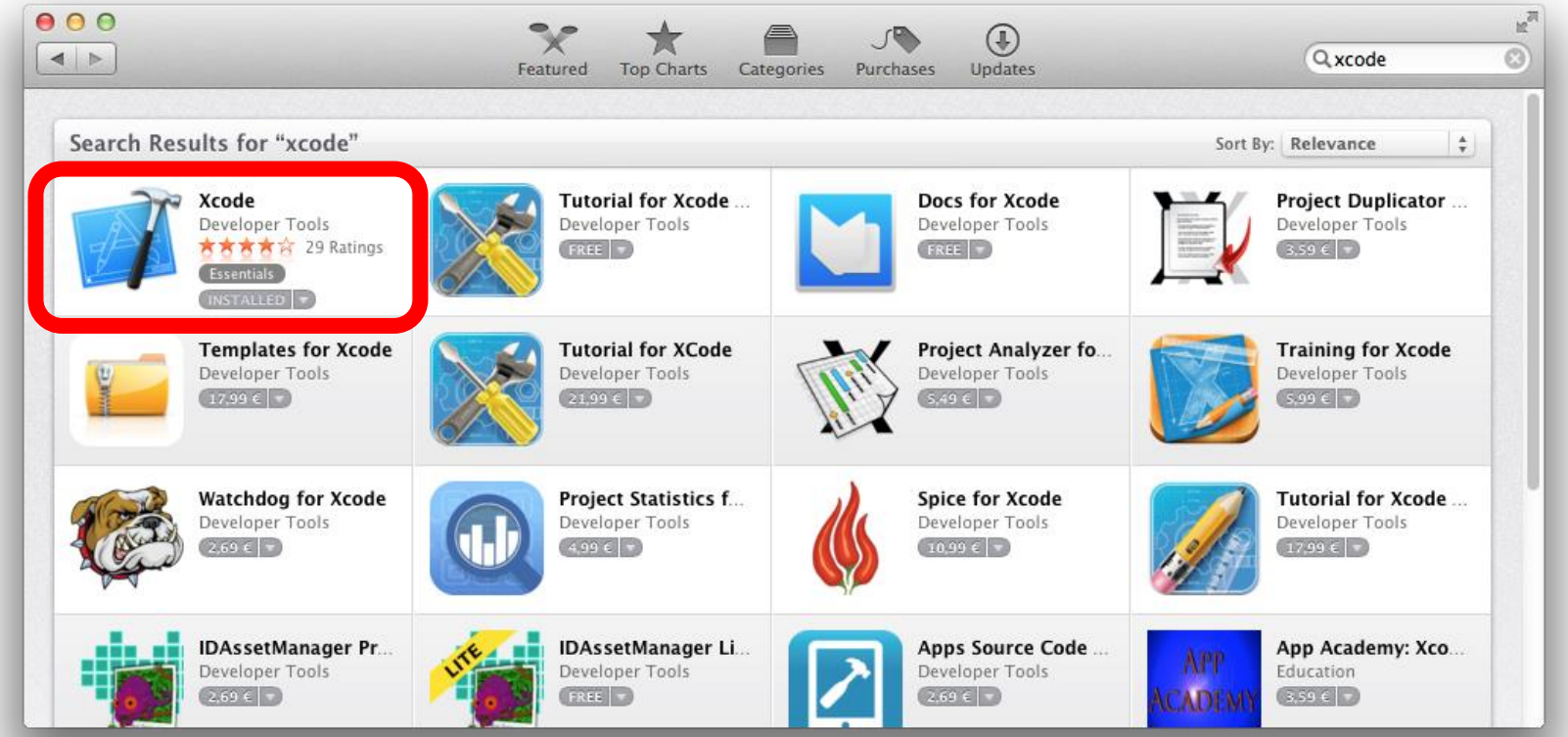
```
sudo apt-get update
sudo apt-get upgrade
sudo apt-get install build-essential
```

- Checking versions:

```
gcc -v
make -v
```

MacOS

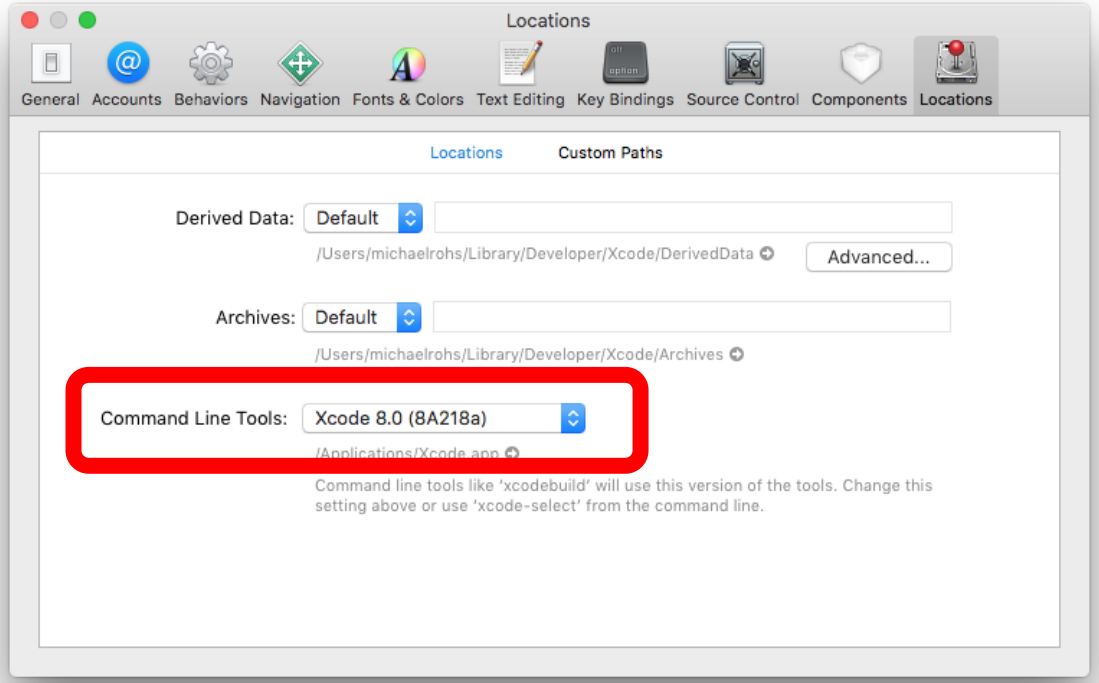
- gcc compiler is part of the *Command Line Tools for Xcode*



- Get Xcode from the App Store

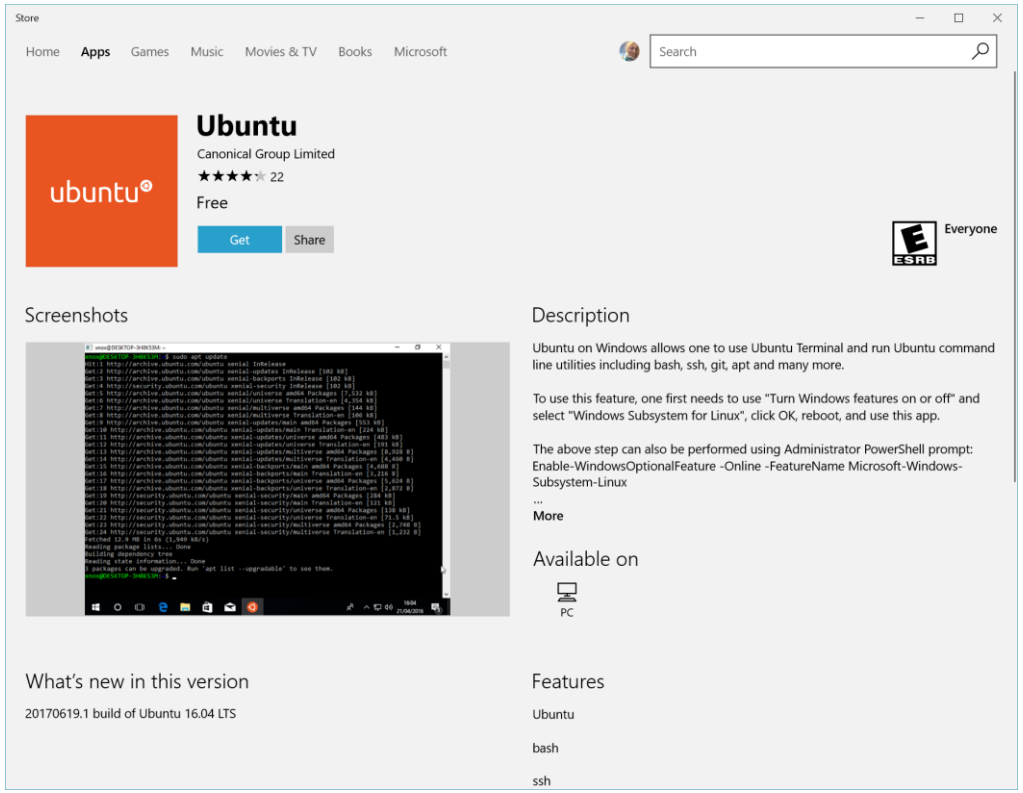
MacOS

- If you don't want to download Xcode or the command line tools are not automatically installed, run the following command in Terminal:
- xcode-select --install



Windows Subsystem for Linux 2 (WSL2) Recommended for Windows

- If you run an up-to-date version of Windows
  - Windows 10, Version >=2004 (Build >=19041) or Windows 11
  - Open cmd.exe and type `wsl --install`
- Restart your machine
- You can now install a Linux distro of your choice from the Windows Store



- https://learn.microsoft.com/en-us/windows/wsl/install

Windows (MSYS2)

- MSYS2 feels like a proper *nix environment on Windows
- Grab MSYS2 at: https://www.msys2.org
  - Install to C:\msys64
  - Run `pacman -Syu` after initial startup

- GCC is provided through MSYS2
  - But not per default
  - Install via `pacman -S gcc base-devel`

- The `unzip` utility is also not provided by default
  - `pacman -s unzip`

Hello World

- Step 0 - Open your text editor of choice
- Step 1 - Paste this code:

```
#include <stdio.h>

int main(void) {
    printf("Hello World");
}
```

- Step 2 – Save somewhere as 'hello.c'
- Step 3 – Open a terminal window
- Step 4 – Compile via `gcc hello.c -o hello`
- Step 5 – Run and get greeted

gcc options

- Check the man pages for documentation:
- http://linux.die.net/man/1/gcc

- Noteworthy right now:
- gcc -v: output compiler version
- gcc --help: get list of options
- gcc -o FILENAME: specify output filename
- gcc -std=XY: set language standard to use. Defaults to `gnu90` (`c90` with gcc specific extensions). (Incomplete) list of supported standards: [`c89`, `c99`, `c11`]. Often `gnu99` or `c99` can be convenient (you'll see us using it sometimes).

Recursion in PostFix, Compiling C

LIVE SESSION