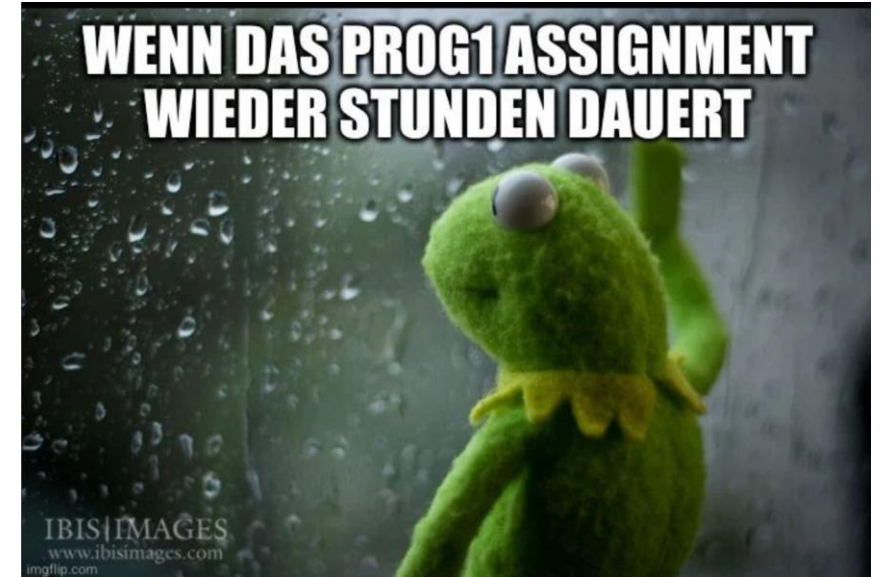


Programmieren 1

Auditorium Exercise 4

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](https://www.instagram.com/memespostfix)

Online Sprechstunden

The screenshot shows a web interface for online meetings. At the top is a navigation bar with icons for home, events, documents, audio, email, groups, user profile, calendar (showing '42'), and search. Below this is a sub-header 'Veranstaltungen' with a dropdown menu showing 'Übung: Übung: Programmieren I'. Underneath the dropdown is a horizontal menu with options: Übersicht, Verwaltung, Ablaufplan, Dateien, Meetings (which is highlighted), Forum, Blubber, Wiki, and Teilnehm. The main content area displays a meeting titled 'Sprechstunden (Mittwoch+Donnerstag 17-19 Uhr)' with an information icon. Below the title are three status items: a star icon with 'Dies ist der Standardraum', a lock icon with 'Teilnehmende haben eingeschränkte Rechte', and an eye icon with 'Das Meeting ist für die Teilnehmenden unsichtbar'. At the bottom of this section is a button labeled 'Teilnehmen'.

Veranstaltungen

Übung: Übung: Programmieren I

Übersicht Verwaltung Ablaufplan Dateien Meetings Forum Blubber Wiki Teilnehm

Sprechstunden (Mittwoch+Donnerstag 17-19 Uhr) ⓘ

- ★ Dies ist der Standardraum
- 🔒 Teilnehmende haben eingeschränkte Rechte
- 👁 Das Meeting ist für die Teilnehmenden unsichtbar

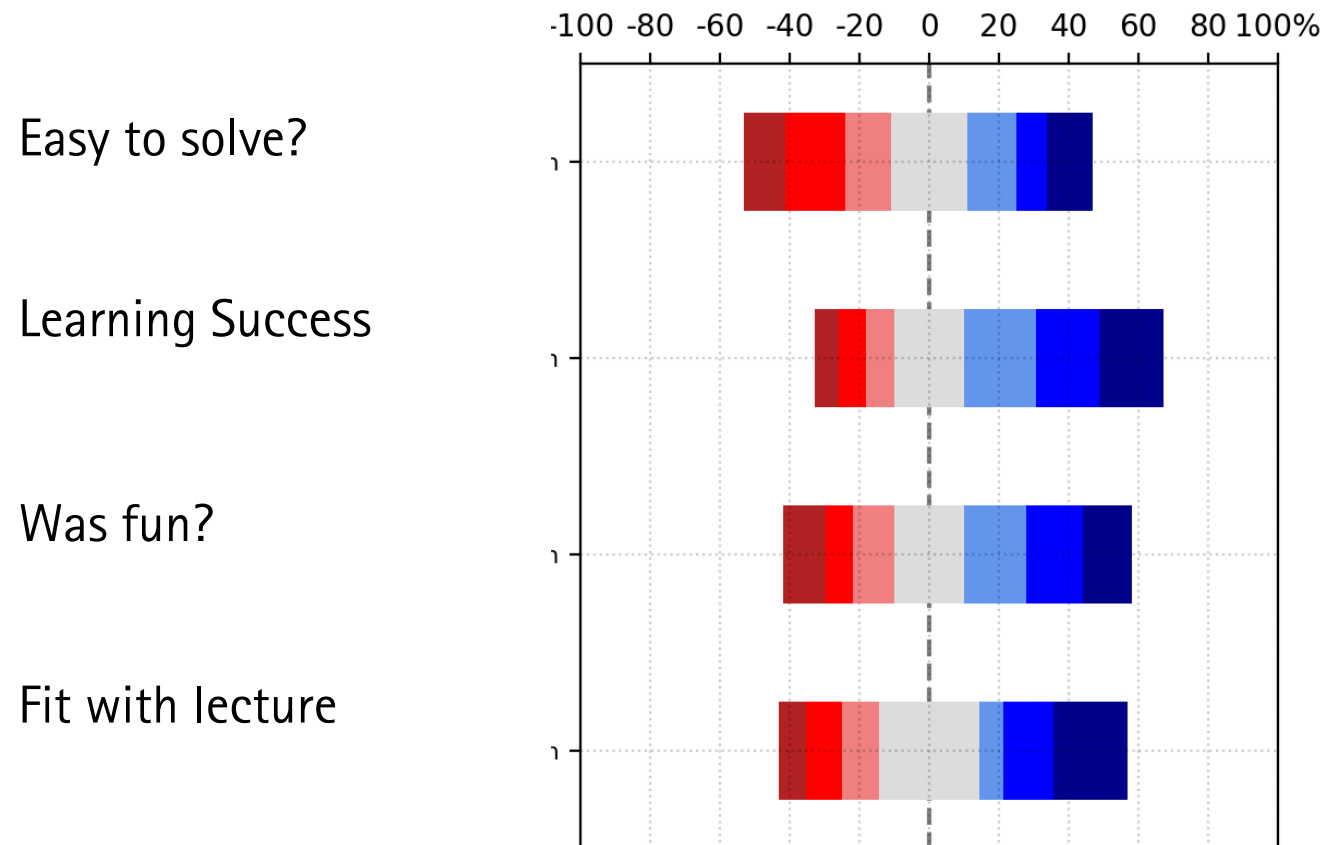
Teilnehmen

Organisatorische Fragen?

ASSIGNMENT 3

Feedback – Assignment 3

DIVERGING stacked bar chart of qualitative results



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

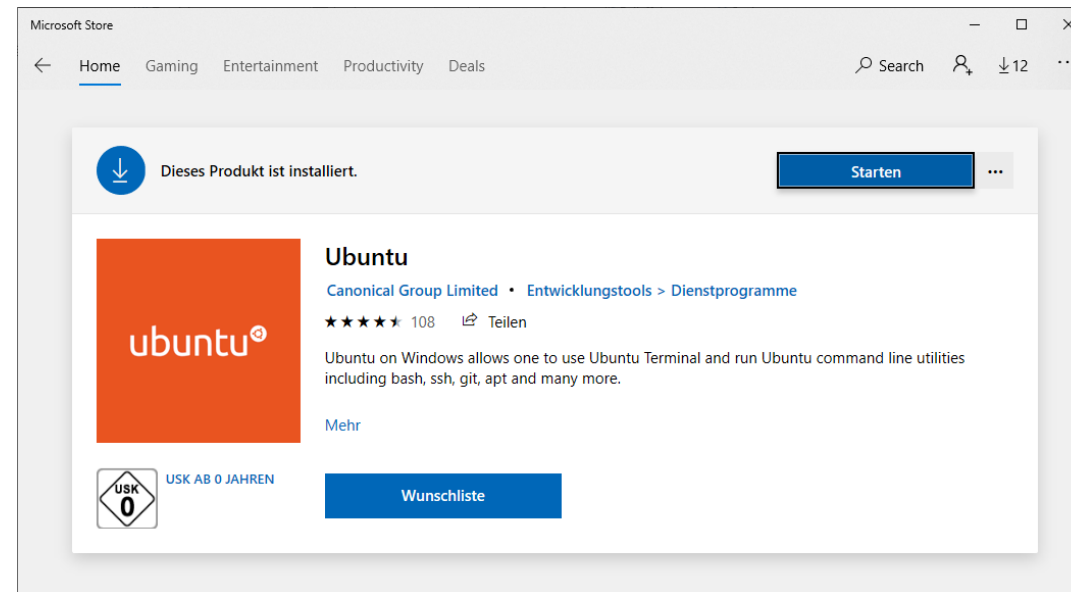
- Already available on StudIP
- We will have a brief look inside now

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
```

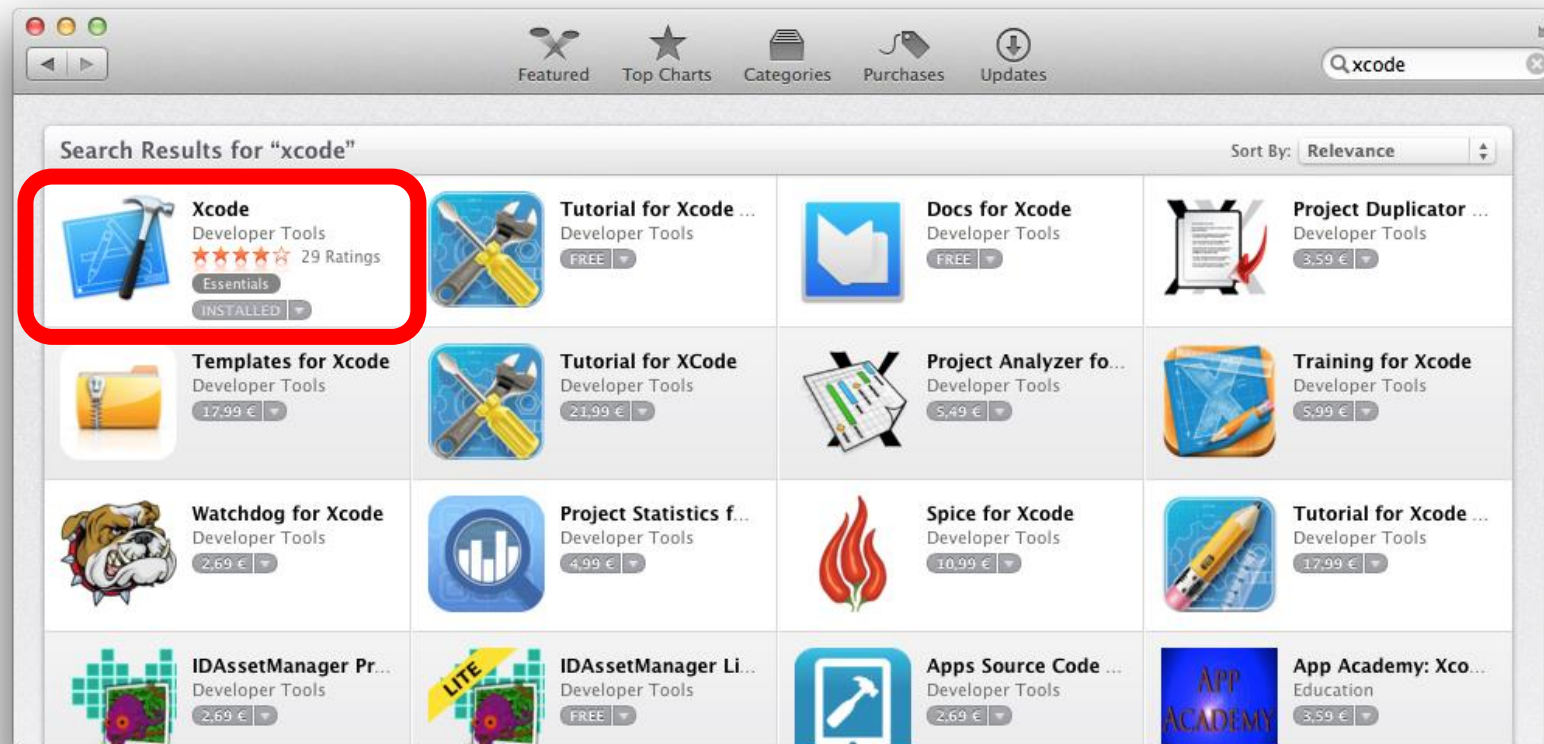
```
sudo apt-get install build-essential
```
- Checking versions:

```
gcc -v
```

```
make -v
```

MacOS

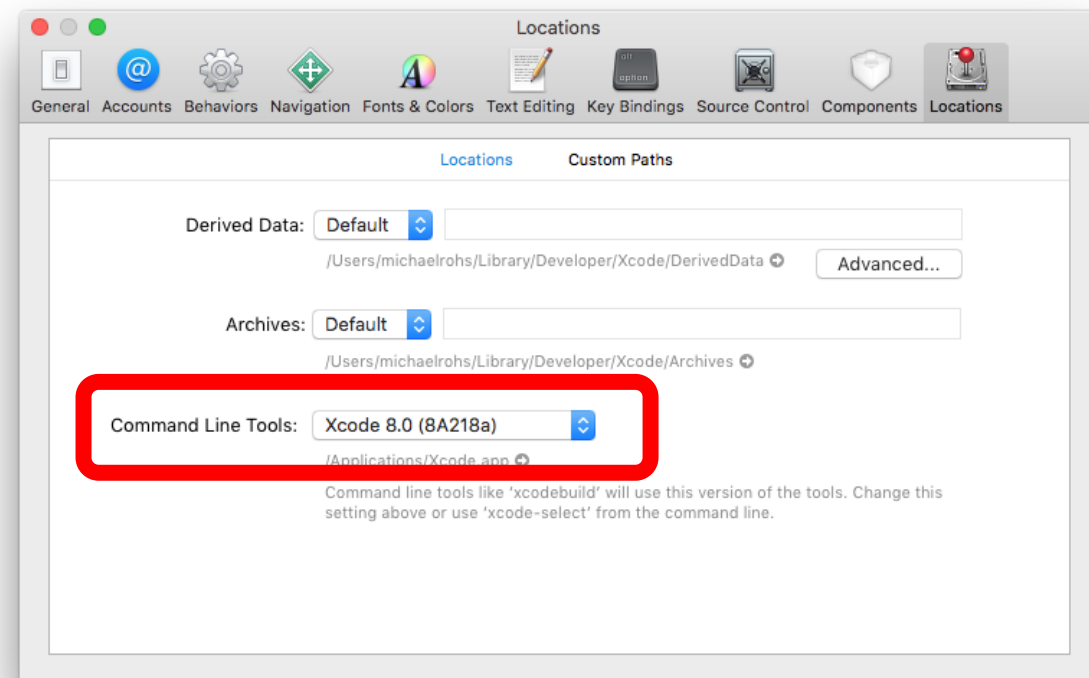
- gcc compiler is part of the *Command Line Tools for Xcode*



- 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`

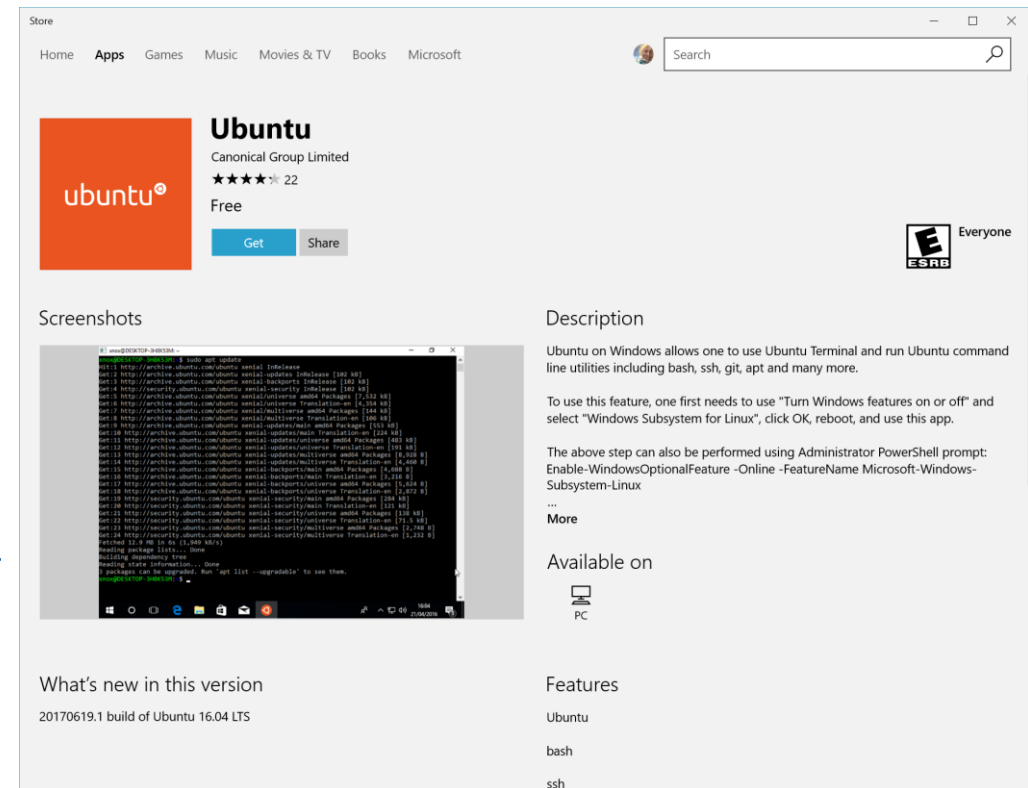


Windows Subsystem for Linux 2 (WSL2) Recommended for Windows

- 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