

# Project Assignments

Procedure + Projects

# Procedure

- Team of 1-2 students
- Several teams can get the same project assignment
- You present your solution in a 5-minute talk
  - So, think of not more than 2-3 slides
- You show:
  - Running application
  - Decomposition: which unit of work? Where did you remove blocking calls?
  - The “core async / parallel code” for implementing the assignment

# Procedure

- You send me until May the 4<sup>th</sup> ☺ EOB:  
Team member(s) + selected project
- birngruber@acm.org
- At presentation day, you send me
  - Content: one pager readme + zipped VS.NET solution
  - until presentation day, 19:00 o'clock:  
per email:
  - Subject: JKU-Parallel {Project Name}
  - Body: Team members: Name + Student Ids
  - Attachments / Download folder: Description of your solution + zipped code



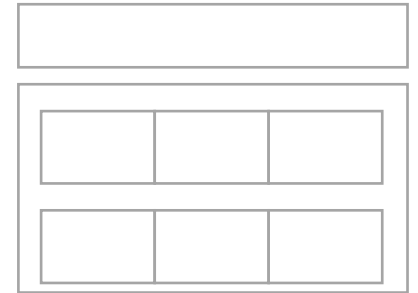
# Projects

- “GREP”
  - Command line utility grep which accepts wild cards for searching text files and switches -r and -t; e.g. Grep -r -t:100 connect \*.txt
  - -r: recursion → so search in folder + subfolders
  - -t: stop after the first n results (order by found file names)

# Projects

# Image Processing Tool

- MAUI / WPF application, where I can enter a OneDrive folder with pictures, or a Picassa / Pinterest / .... location, or .... – your choice
- Picture thumbnails (128x128) are loaded and shown
- Users can apply filters and transformations to images
- Users can save transformed images
- UI remains responsive
- I can cancel operations (loading, transformations)
- Think of folders with about > 500 pictures



# Projects

- File Uploader (One Person Team)
  - An application (Web, MAUI / WPF, cmd line) that allows users to upload files asynchronously.
  - Use .NET Tasks to handle file I/O operations without blocking the main thread, providing a smooth user experience.
  - Think of upload folders with about > 500 larger files (e.g. your picture collection)

# Projects

## HDD Tree Size

- MAUI / WPF application
- I want to select a Folder (e.g. C:\)
- Program shows all subfolders + their size in MB
- Program shows all direct files + their size
- I can drill down:
  - select a folder and then I see the sizes again
- UI remains responsive – updates sizes / progress report
- I can cancel and select a new “start folder” any time

# Projects

## Social Media Feed Aggregator

- MAUI / WPF application for showing live information of different social media feeds / news ... sources
- App fetches data and / or parses web pages
- I can configure data sources (if needed)
- I can see updates in real time
- Think of handling many entries in the app, when app runs for days  
→ rolling data?



# Projects

- Weather Data Aggregator
  - A service that collects weather data from various APIs concurrently
  - The application should provide real-time weather updates
  - and historical data analysis

# Projects

## Ping-List-Bot command line tool (max 1 person teams)

- I can provide a list of IP addresses which are pinged
- Tool shows ping result
- Tool continues to ping an IP address
- After first successful ping, tool tries HTTP request on port 80 / 8080 and shows summary: HTTP port 80 / 8080 is open / not open
- Disclaimer: very easy to change this to a DoS HTTP attack bot – please don't do this!

# Projects

## ILoggingService

- I can use ILoggingService { void AddLog(LogEntry entry); } + implementation
  - LogEntry { LogSource (string), EventTime (DateTime), Message (string) }
  - ILoggingService call returns immediately → delegates writing of an entry to a DbLogChannel (consumer)
    - Log method can be called concurrently; LogEntries are stored in call order for each source
- DbLogChannel writes in a batch: one DB-Connection, one transaction
- DbChannel inserts 1- max 100 records per „transaction insert batch“
- Create a stress test app which adds log entries from 1- N (max 100) concurrent log sources ( every 10-x (max 500) milliseconds, a new log entry is added;

# Projects

- Real-time Stock Data Processing System
  - Develop a system that processes data in real-time from multiple sources
  - This could simulate a stock ticker processing system, which handles data for a different stock.
  - Alert, e.g., when a rapid price changes
  - App could do concurrent data analyses (like moving averages for multiple stocks at the same time)
  - User friendly interface

# Projects

- ETL (Extract, Transform, Load) Pipeline
- Design ETL pipeline(s) that can perform
  - data extraction,
  - transformation,
  - and loading operations in parallel
- This project should demonstrate how to handle big data workflows efficiently

# Your Projects ... ?

- YOUR project ideas, e.g.,
- Parallel Graph Algorithms Visualization

	Team Red	Team Green	Team Blue
Grep	Patrick Aigner	Elias Rechberger	
Image Processing Tool		Gheorghe Balamatiuc Gicu Rata	
File Uploader	Andrei Blokhin		
HDD Tree Size	Maximilian Wahl	Philipp Olivotto	
Social Media Feed Aggregator			
Weather Data Aggregator	Bernhard Schertler		
Ping List Bot			
ILoggingService			
Realtime Stock Data Processing System	Lukas Androsch		
ETL Pipelines			
Branch&Bound Algo Demo	Florian Schwarcz		
Rooster Analyzer Red Cross	Filip Okic		
File Transfer Client2Client	Christoph Aigner		
Football ETL / WebCrawler	Sebastian Stiegler		
Collaborative Text Editor	Ulrich Dultinger		