CREATIVE PROGRAMMING AND COMPUTING

Course Introduction

SUMMARY

- Course number: 054281
  - Course number module 1: 054279
  - Course number module 2: 054280
- Credits: 10.0 cfu
- Attendance: warmly suggested
- Lectures and laboratories on
- – Wednesday morning (official time: 10:15 – 14:15)
- – Friday morning (official time: 10:15-14:15)

SUMMARY

- Instructor: **Massimiliano Zanoni**
  - E-mail: massimiliano.zanoni_at_polimi.it
  - Meetings: an e-mail is required to arrange a meeting
  - Other meetings can be arranged on different days / different time

- Teaching assistant:
  - **Luca Comanducci**
    - E-mail: luca.comanducci_at_polimi.it
    - Tel. (02-2399)9654
  - **Michele Buccoli**
    - E-mail: michele.buccoli_at_polimi.it

Official communications will be sent to your PoliMi email accounts. You are expected to check your email frequently

TEXTBOOKS AND MATERIAL

- Creative computing is a wide and multidisciplinary research area and no textbook cover all topics covered within the course

- Material needed for the exams are: slides, codes and other provided material

- References:

  - They are provided at the end of each set of slides.

  - Some references are available on the website of the course, other references can be downloaded for free, other are not free to download but are given for your interests and are not needed for the exam

- • Course webpage: available on WeBEeP (https://webeep.polimi.it)

  - If your subscription is not active, please send a subscription request. We will activate your subscription ASAP

- Github to store the source code

- Slack workspace for community and quick communication

TEXTBOOKS AND MATERIAL

Github

The source code of the course will be hosted on the repository https://github.com/mae-creative-pc/cpac_course_2021

Home Page

https://mae-creative-pc.github.io

To clone the repository, i.e., have a synced copy in your local computer, use the URL https://github.com/mae-creative-pc/cpac_course_2021.git from your Git client, or the command

`git clone https://github.com/mae-creative-pc/cpac_course_2021.git`

You can freely clone the repository. If you want to create a new repository starting from this, you can fork the repository on your own Github account, by clicking the *fork* button in the top right corner of the Github page.

Need help? Visit https://guides.github.com/activities/hello-world/ or follow a Tutorial on Git

TEXTBOOKS AND MATERIAL

Slack Workspace

- The course is organized with a Slack Workspace used to share links and have a more prompt communication with students.

- Join the workspace using the following invitation link (expires in 30 days)

- https://join.slack.com/t/cpac2021-2022/shared_invite/zt-uzy0tsfr-0cTcOPaRtbkKiygaxaRjAA

- If the link has already expired, ask professor Zanoni for a new one

SOFTWARE AND TOOLS - PREREQUISITE

For the course, we will assume you have some familiarity with the following tools.

If you don't, please follow the provided tutorials

- Supercollider (https://supercollider.github.io)
  - https://supercollider.github.io/tutorials/
- Python 3 (https://www.python.org/downloads/)
  - If you never installed Python, look for Python 3.7.9 https://www.python.org/downloads/release/python-379/
  - Otherwise any Python3 previous installation should work (more on this later)
  - Tutorial https://www.w3schools.com/python/
- Numpy (https://numpy.org)
- Scipy (https://www.scipy.org)
- Scikit-learn (http://scikit-learn.github.io/stable)

SOFTWARE AND TOOLS – ADDRESSED WITHIN THE COURSE

Some other tools will be addressed during the course

- Python 3 libraries

  - Keras (https://keras.io)

  - Librosa (https://librosa.github.io/librosa/)

  - OpenCV (https://pypi.org/project/opencv-python/)

- Processing (https://processing.org)

- Wekinator (http://www.wekinator.org)

IDE and Platforms

- Processing

- Microsoft visual studio code (https://code.visualstudio.com)

- Google colab (https://colab.research.google.com/notebooks/intro.ipynb)

IDE FOR PYTHON

You can use any IDE you may be already familiar with. However, we may not be able to help you in case of issues with your specific IDE, or how to do the same things in your environment.
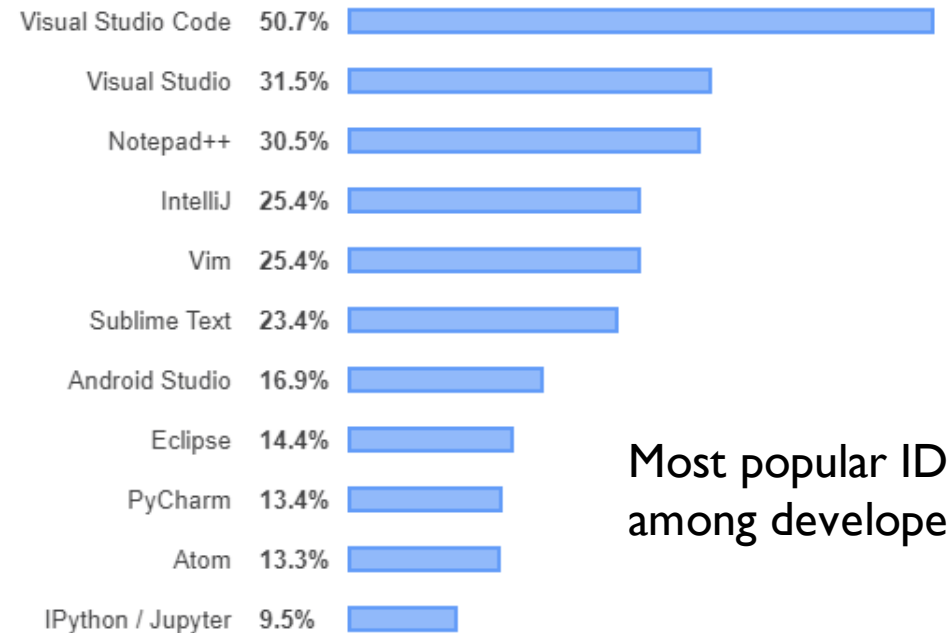
During the course we will use the following IDEs:

Microsoft Visual Studio Code

- It is free (for everybody, teachers included)
- Several plugins for languages and tools
- Cross Platform
- Widely used in industry (better get used to it)

Google Colab

- Python on the web, hosted by Google
- Useful for hardware acceleration

Source: https://insights.stackoverflow.com/survey/2019

IDE	%
Visual Studio Code	50.7%
Visual Studio	31.5%
Notepad++	30.5%
IntelliJ	25.4%
Vim	25.4%
Sublime Text	23.4%
Android Studio	16.9%
Eclipse	14.4%
PyCharm	13.4%
Atom	13.3%
IPython / Jupyter	9.5%

Most popular IDEs among developers

SET UP IDE FOR PYTHON

Visual Studio Code (VSCODE) + Python

https://docs.google.com/document/d/1GxJ8pgdAnah1K2ExN9J4gN-SvIEsH0420-Y75BbFTi4

- Feel free to add comments to the document if something is not clear and/or something gets wrong, so I can fix it and possibly correct the document

Google Colaboratory

- Brief tutorial at   https://colab.research.google.com/drive/1wI7abwWxx4IgE9MqFhve-cAj8ikyDIG9

ONLINE RESOURCES

- https://www.creativeapplications.net

- http://interactivedesign.it

- http://digicult.it/it/

- http://www.soundesign.info

- http://shapeplatform.eu

- http://neural.it/it/category/publishing/news/

- http://artelectronicmedia.com

- https://www.leonardo.info

- https://zkm.de/en

- http://computationalcreativity.net/home/

EXAM FOR MMI

- The exam includes a **written** part and a **project**

- **Written exam**:

- A few questions on theoretical aspects

- **Project** : 2 parts

  - **Hackathon – like prototyping** (it will happen in class - about 10h)

    - *Pitch:* in a specific session each student should think to an idea for the project and attract other students to join – groups will be composed by 3 students

    - *Concepting*: the groups should produce a concept of the project

    - *Prototyping:* each group have 7h to complete the first prototype of the project and 15' to present it to the class

  - **Final release:** should be delivered through a proper presentation to one of the 3 instructors of the course up to the end of the end of A.A. 2020-2021. In order to assess the quality of the work and the acquired knowledge on the laboratory part of the course, the reviewer will ask some questions related to the code or the system and may ask to provide some modification.

GRADE FOR MMI

- The final grade of the exam will be determined by computing the average of
  - The written exam
  - The project
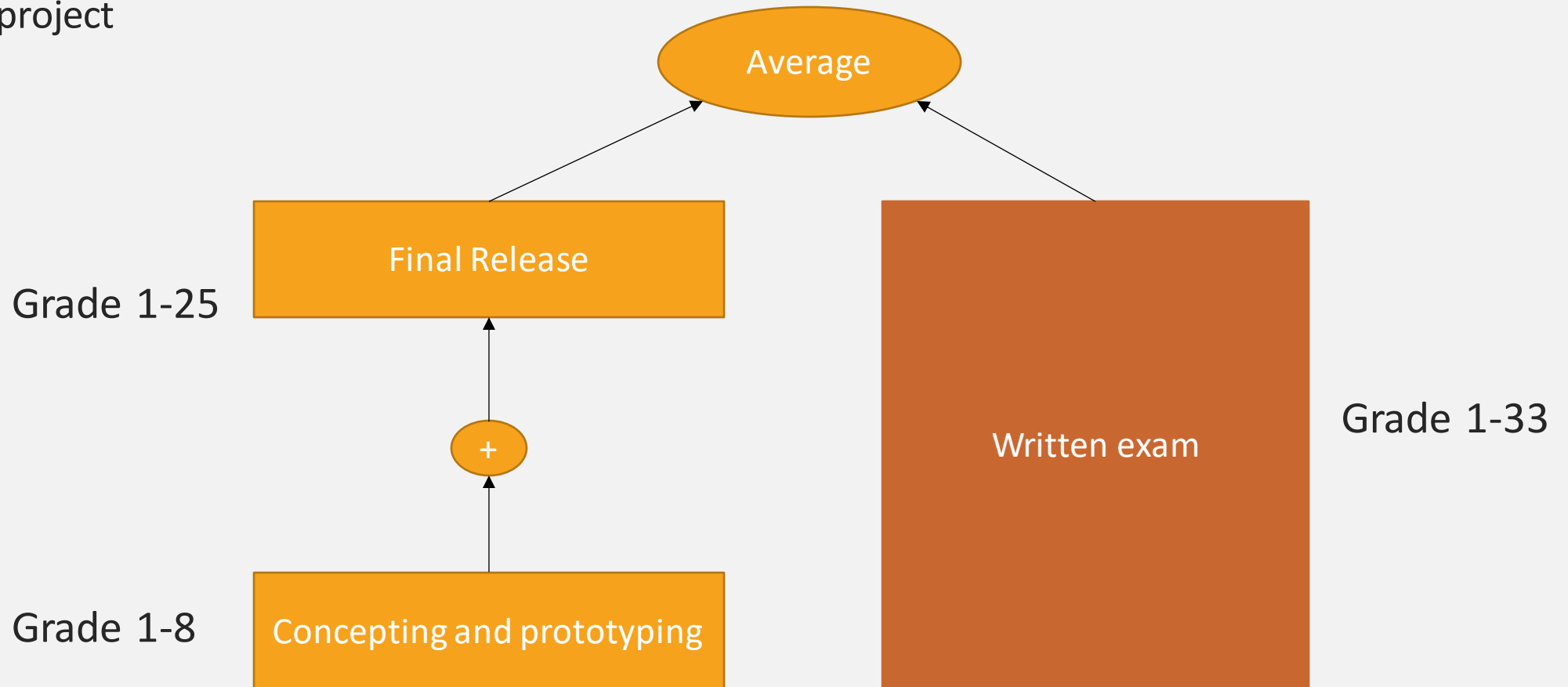
GRADE FOR MMI

- Students are allowed to refuse the grade reassigned at the Hackathon.

- Students are allowed to not attend Hackathon.

- In both the cases the students will make an extension of the project comparable to work done in class for the first part of the project (about 10h) to be delivered before the end of A.A. 2021-2022

EXAM FOR MCR

- For those who are in the Acoustic Engineering track and they ONLY attend module 1

- The exam includes a **written** part related to module 1 and a **project**

- **Written exam**:

- A few questions on theoretical aspects

- **Project** :

  - The project should be done in group of 2 or 3 students

  - Should be delivered through a proper presentation to one of the 3 instructors of the course up to the end of the end of A.A. 2021-2022. In order to assess the quality of the work and the acquired knowledge on the laboratory part of the course, the reviewer will ask some questions related to the code or the system and may ask to provide some modification.