The background is a dark blue gradient with a subtle pattern of white dots. Overlaid on this are several concentric circles and arcs in a lighter blue color. Some of these arcs have degree markings, such as 140, 150, 160, 170, 180, 190, 200, 210, 220, 230, 240, 250, and 260. There are also small white arrows pointing in various directions, suggesting a sense of rotation or movement.

ONLY560

FUNCTIONAL PROGRAMMING

FOR ANALYTICS

UNIT 1 – SOFTWARE INSTALLATION

FEYZI BAGIROV

OBJECTIVES

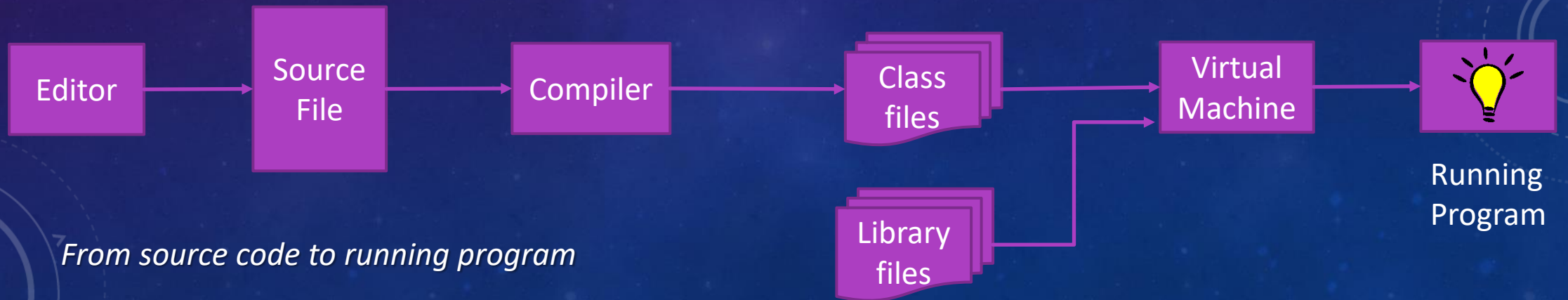
- Install primary programming languages and environments
- Understand basic concepts of each language
- Write a program in each of the languages/environments

GROUP EXERCISE #1 – ICE BREAKER

- Group by 4
- Each pair, interview the other
- Collect the following information
 - Name
 - Where are they from
 - Why they decided to attend Harrisburg University
 - Interesting fact about them
- Introduce the person you interviewed to your group
- One person in your group introduce the team to the class

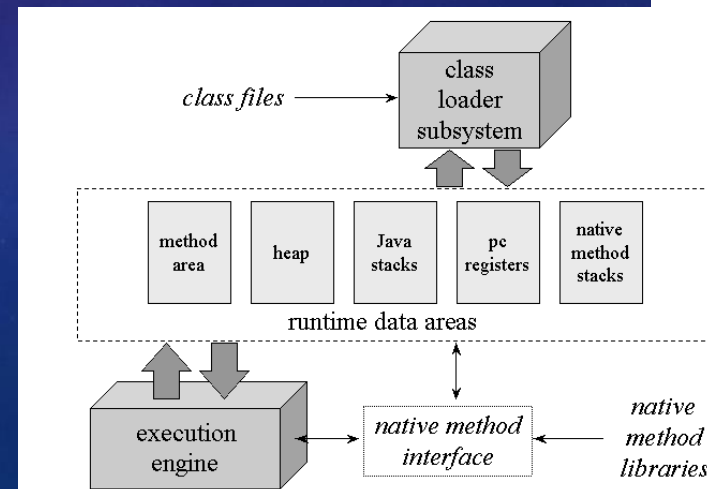
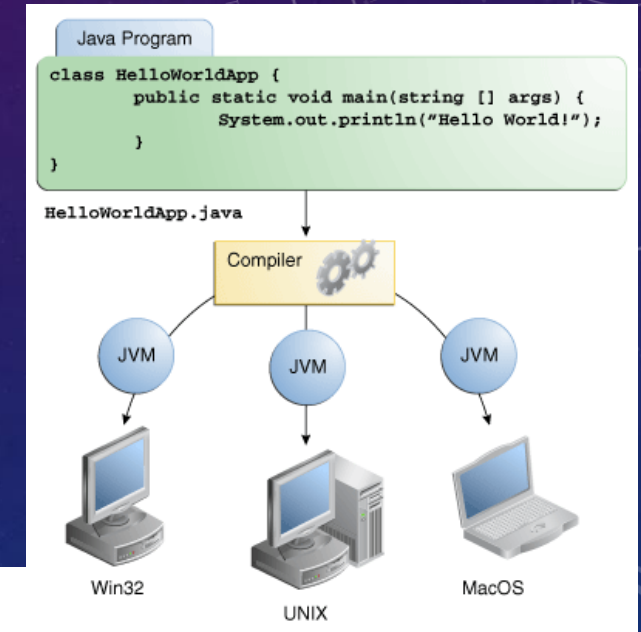
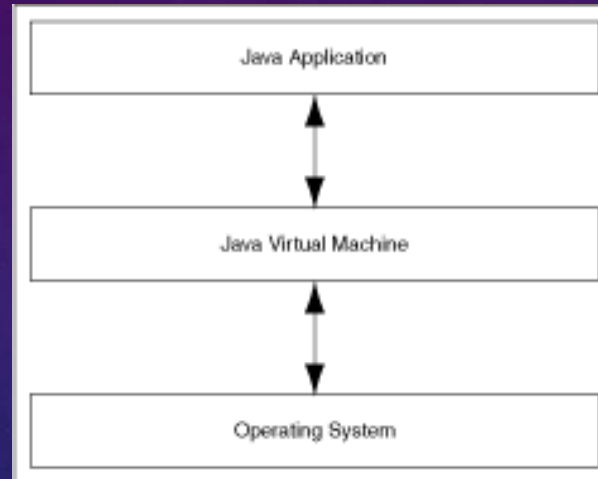
JAVA - OVERVIEW

- Initially designed in 1991
- Targeted to run consumer devices, e.g. TV set top boxes
- Built to be simple, secure, and usable on many processor types
- In 1994, design was modified to support web applications
 - Architecturally neutral, real-time, reliable, secure
 - The application to Internet applets is what made Java explode



JAVA – VIRTUAL MACHINE

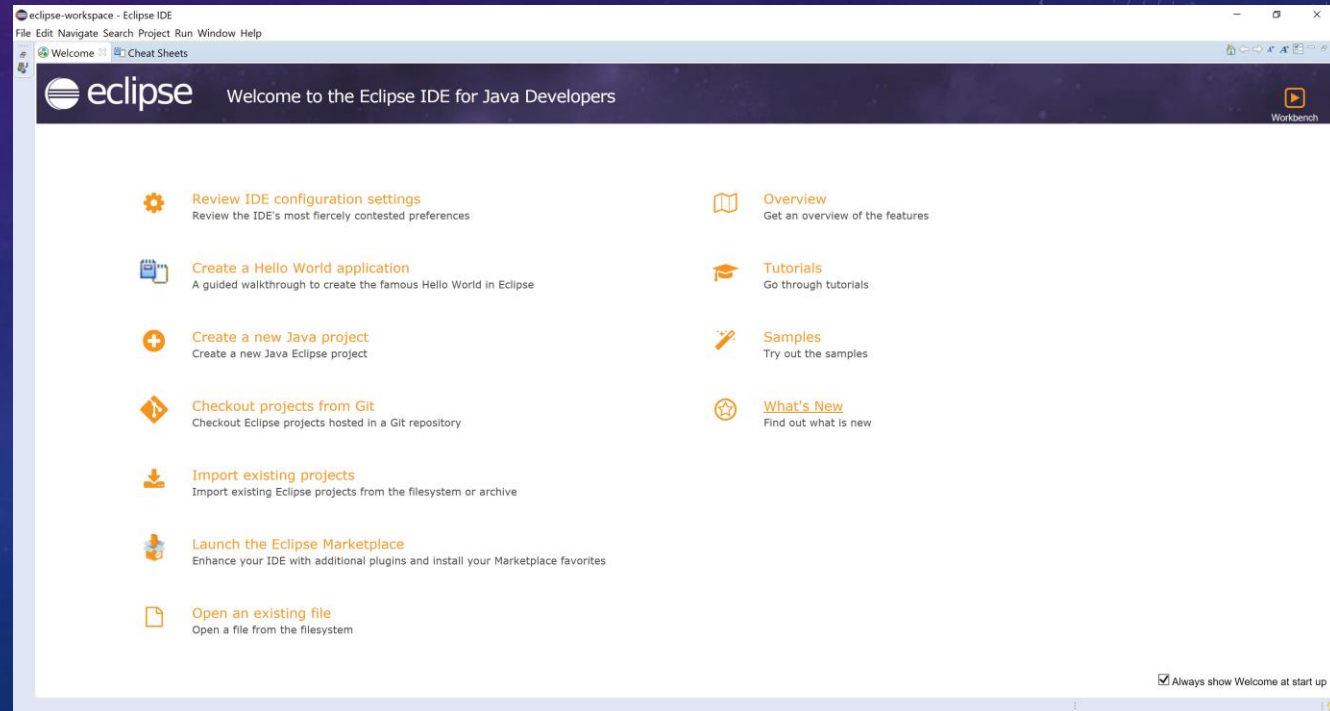
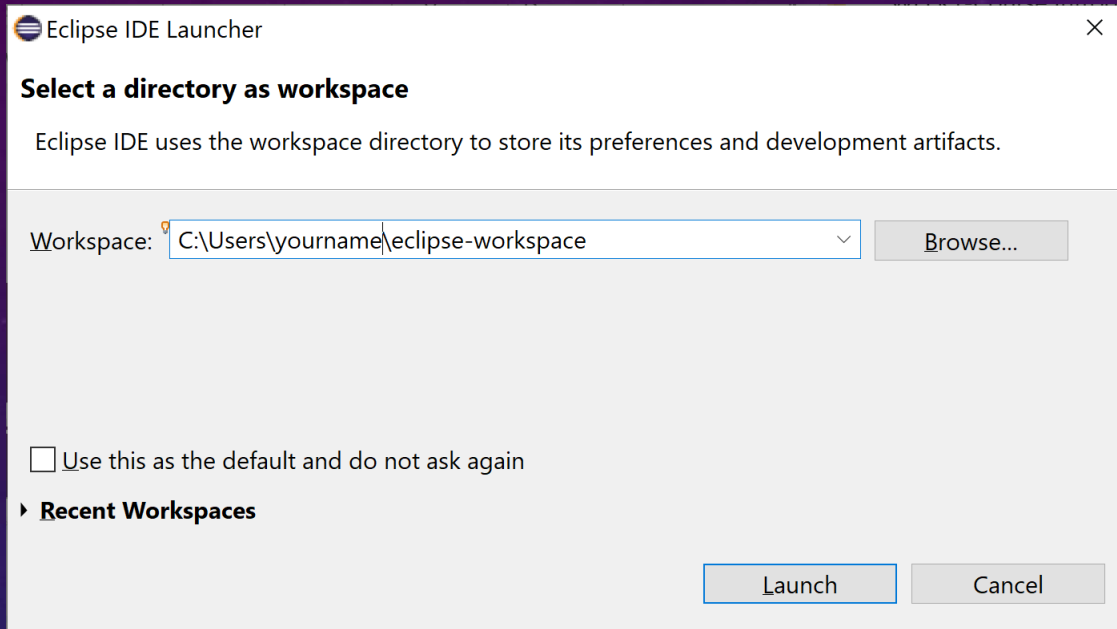
Software from Oracle that converts a program in Java bytecode (intermediate language) into machine language and executes it. The Java Virtual Machine (JVM) is the runtime engine of the Java Platform, which allows any program written in Java or other language compiled into Java bytecode to run on any computer that has a native JVM.



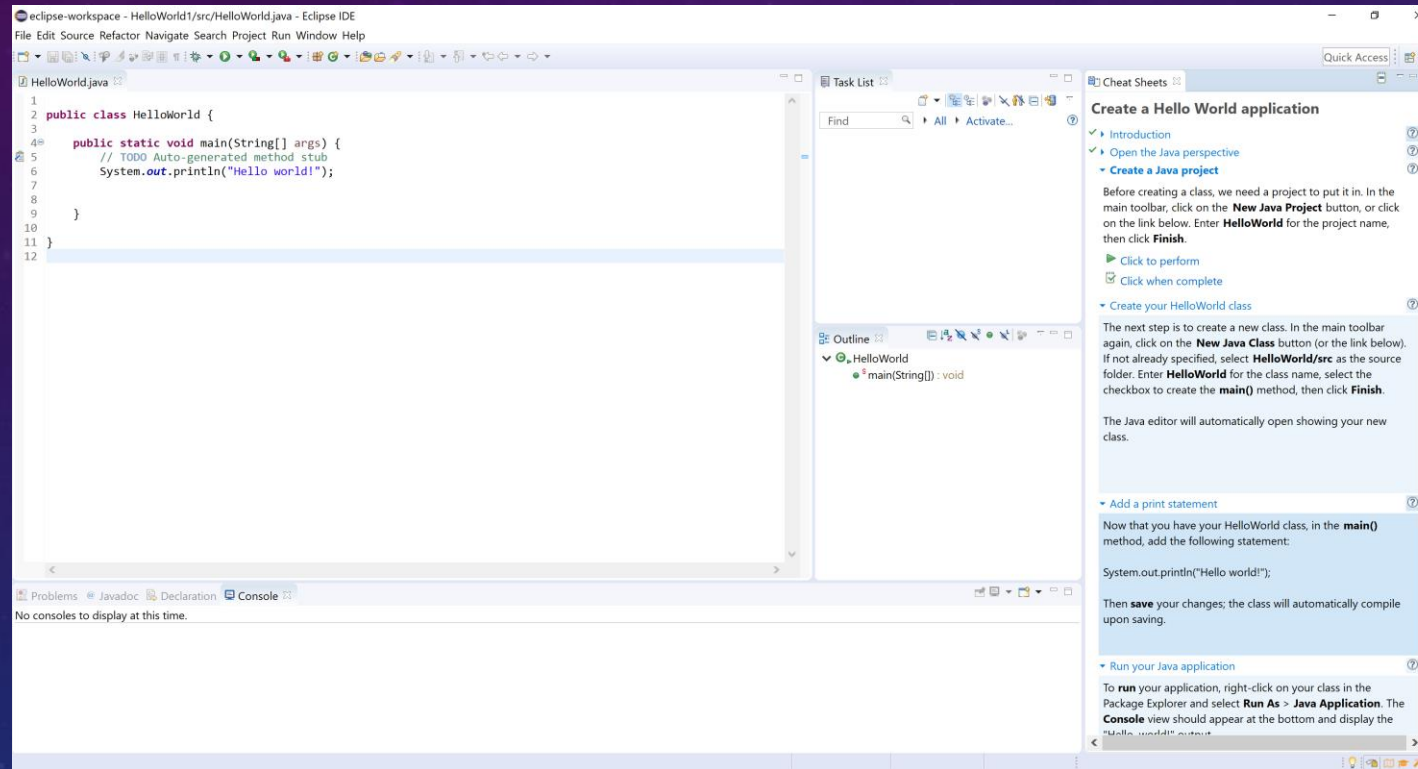
JAVA – WHY ARE WE STUDYING IT?

- One of the most popular languages today
- Rich set of libraries, with support of data manipulation
- Excellent exemplar of objected oriented concepts

JAVA – IDE OVERVIEW



JAVA – HELLO WORLD!



JAVA – PROGRAMMING EXERCISE

- Write a program that prints three items, such as the names of your three best friends or favorite movies, on three separate lines.

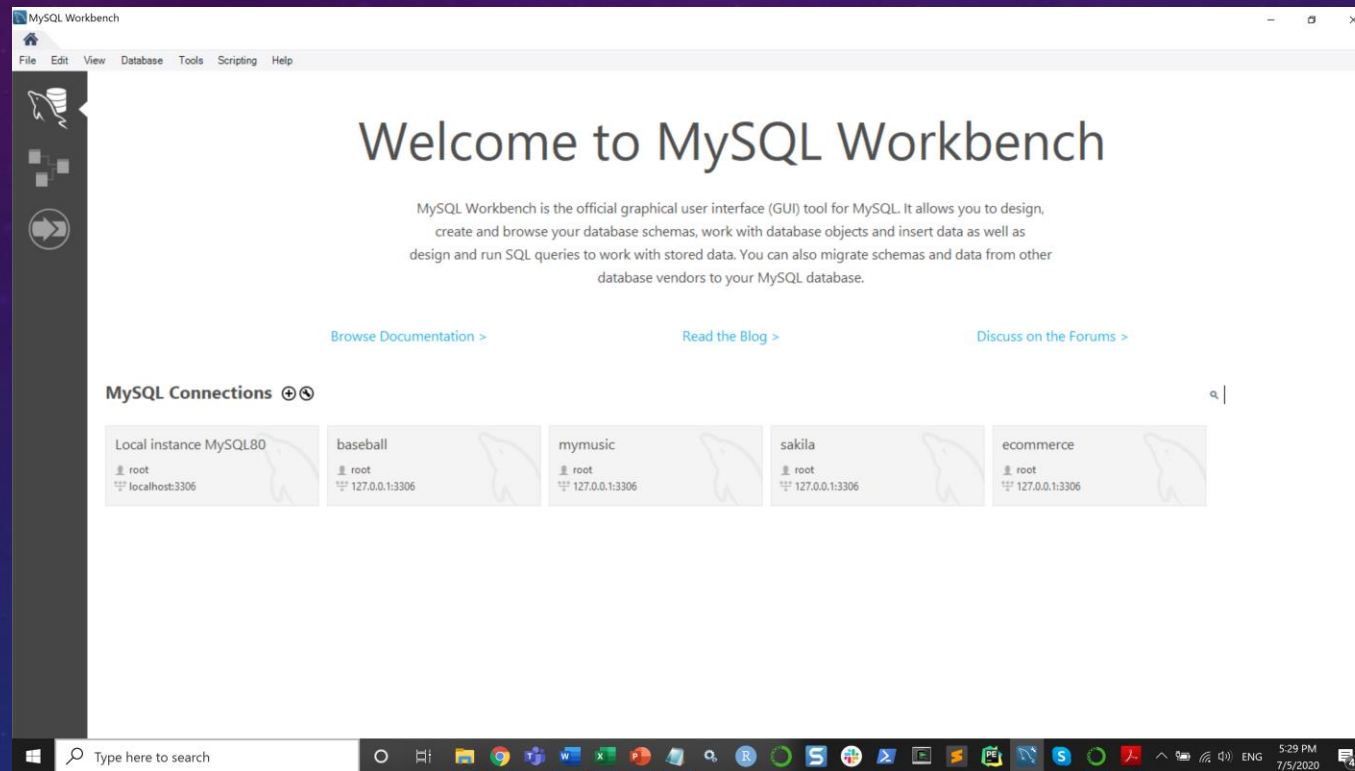
SQL – OVERVIEW

- Short of Structured Query Language
- Standard language for storing, manipulating, and retrieving data in relational databases
- Based on relational algebra and tuple relational calculus
- Can be informally classed into 3 sublanguages
 - Data query language (select)
 - Data definition (insert, update, delete)
 - Data definition(schema **think meta data ** creation and modification)
 - Data access control
- Is primarily a declarative language – more on that later in the course
- Most widely used database language

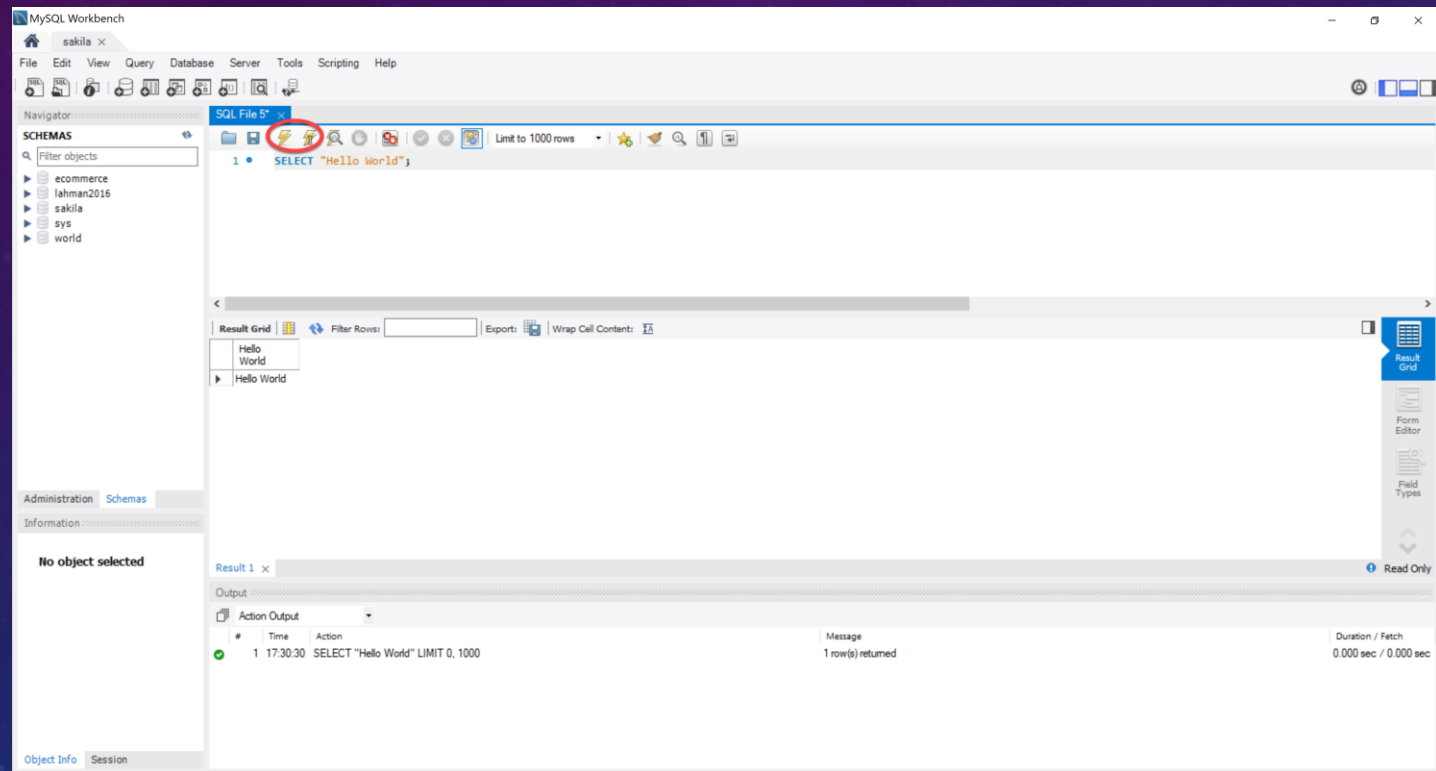
SQL – WHY ARE WE USING IT?

- Large quantity of data stored in relational databases
- SQL allows you to build, store, access, manipulate databases

SQL – WORKBENCH OVERVIEW



MYSQL – HELLO WORLD!



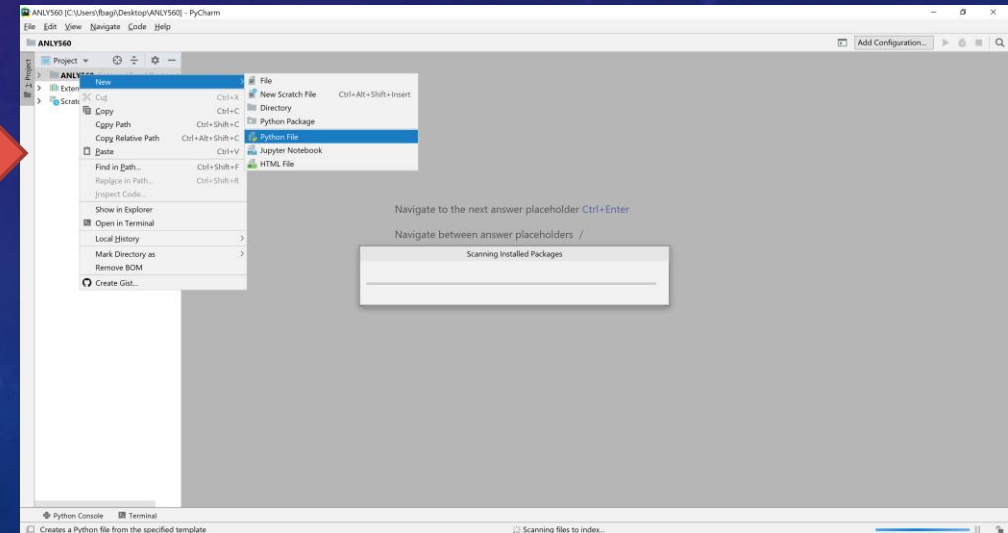
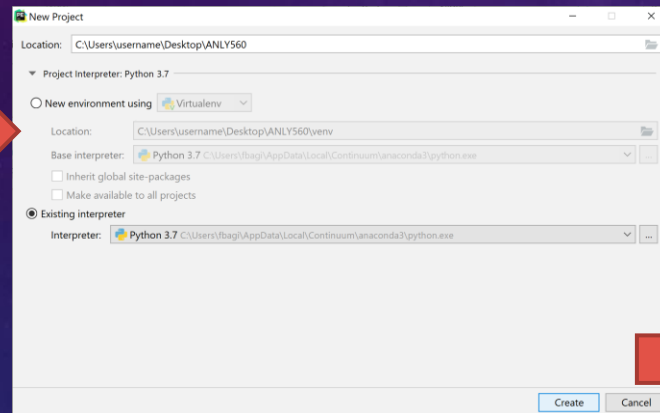
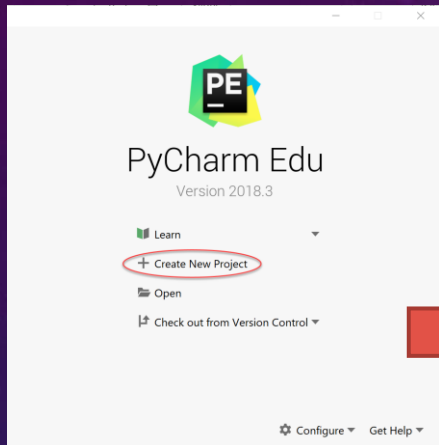
PYTHON - OVERVIEW

- Interpreted language
- General purpose programming
- First released in 1991
- Design philosophy
 - Code readability
 - Syntax optimized for less code
- Multi-paradigm
 - Object oriented
 - Structured programming
 - Functional programming

PYTHON – WHY ARE WE USING IT?

- (One of) the most important languages for data analytics currently
- Excellent language to learn programming concepts
- An effective 'glue' language that allows you to work with others
 - Libraries in other languages (e.g. R, C++)
 - Database connectivity
 - Web programming

PYTHON IDE – PYCHARM COMMUNITY EDITION



PYTHON IDE – JUPYTER

Install jupyter package

conda

If you use `conda`, you can install it with:

```
conda install -c conda-forge jupyterlab
```

pip

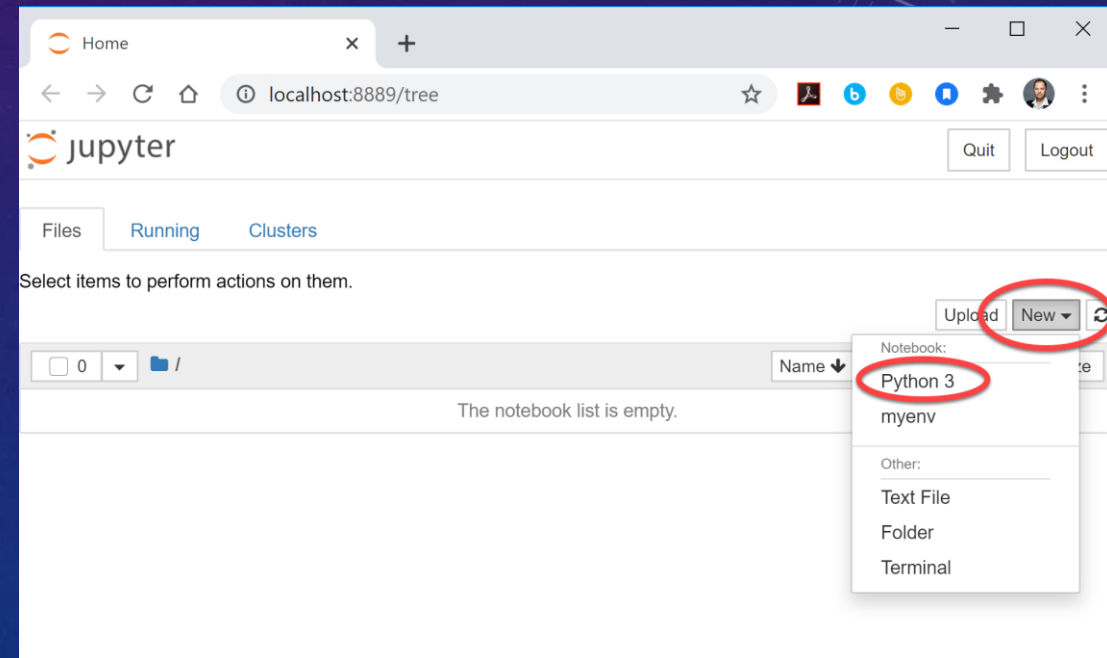
If you use `pip`, you can install it with:

```
pip install jupyterlab
```

Launch jupyter

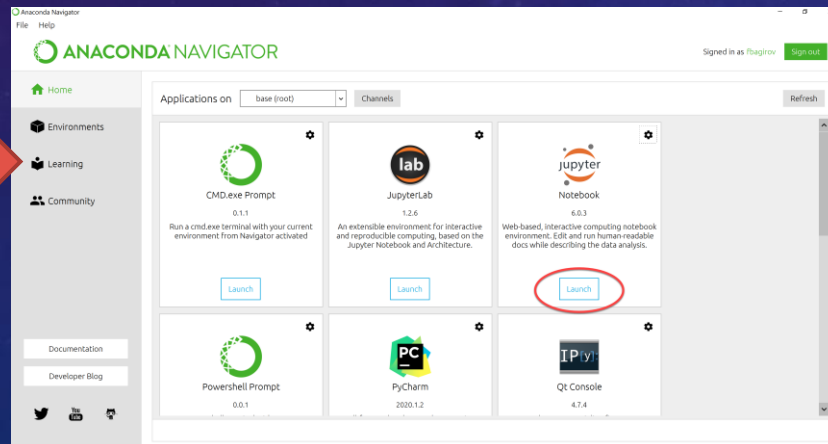
```
fbagi@DESKTOP-DT19BQ7 ~  
$ jupyter notebook
```

Launch Python Notebook



Install Anaconda Navigator (if you have conda < v4.0.0)

> conda install anaconda-navigator



PYTHON – OVERVIEW AND HELLO WORLD

