

Tooling



Eng. Mohammad A.Hekal

Eng. Omar Soliman

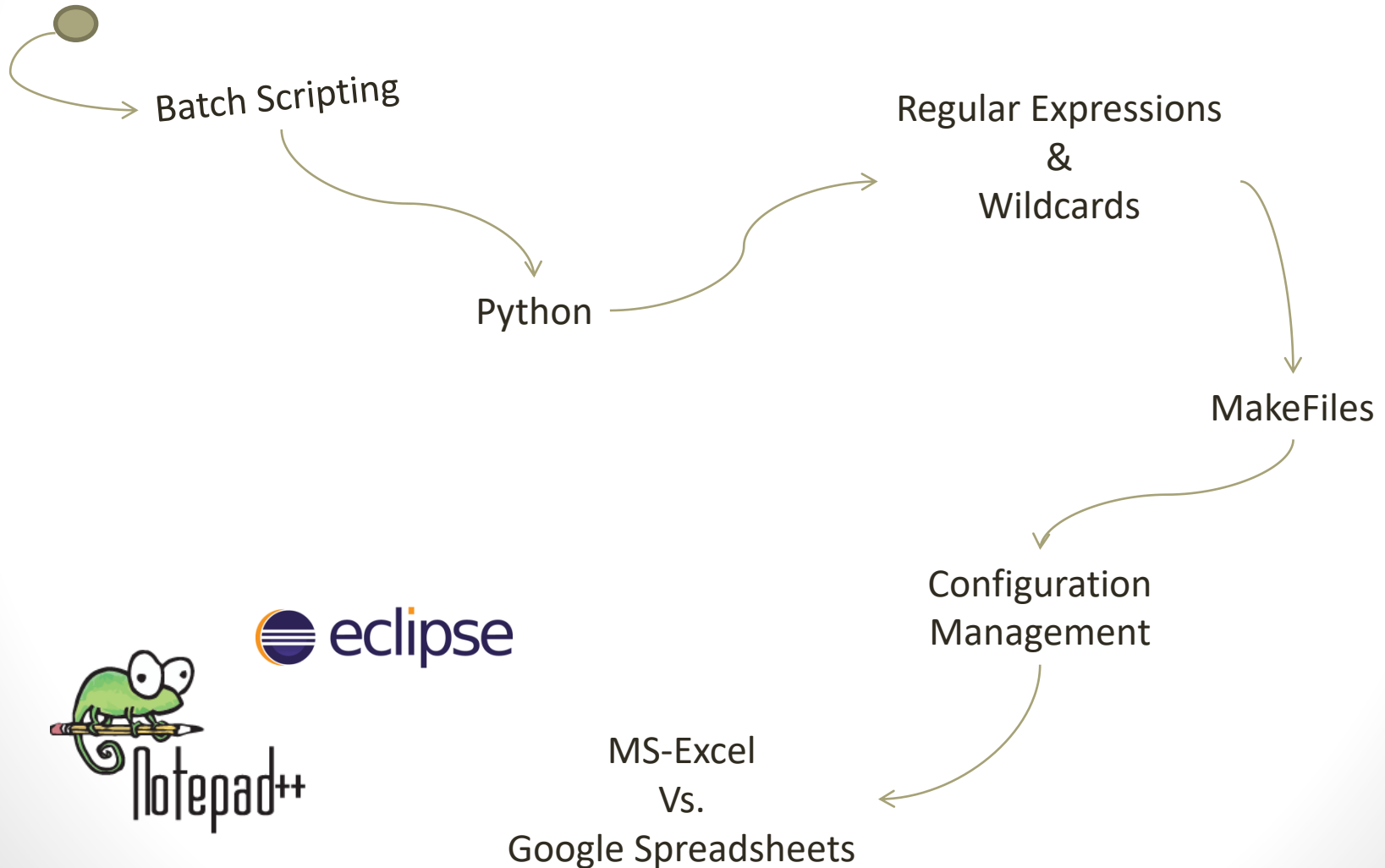
"I don't have time,
I have to work..."



Introduction

- Tools are for your assistance not for doing your job .
- Tools are for saving time and resources .
- Tools may be in a form of software or a hardware .
- Tools may cost from 10\$ up to 10000000\$.

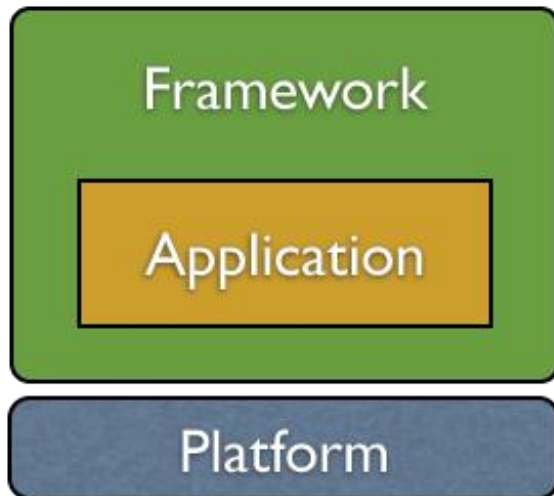
Course Map



Important Terminology

- **Application Programming Interface (API) :**
 - An Interface used by an application program to communicate with other program that provides services.
 - Ex. Printf(), getch(), etc..
- **Software Library:**
 - Is a collection of implementations of behavior, written in terms of a language, that has a well-defined interface by which the behavior is invoked.
 - It can be an open source library or an archived library.
 - Ex. Stdio, math, etc...
- **Framework:**
 - Big Library, Runtime Environment, Assistive programs, scripts, etc..
 - Used in developing applications and in executing applications
 - Inversion of control.....It calls you
 - Ex. .Net framework
 - = (Framework Class Library (FCL) + Common Language Runtime (CLR))

Framework Vs library



Important Terminology

- **Tool Chain[Native, Cross]:**
 - A collection of software tools used to output a program that will run on certain platform.
 - Ex. GNU Toolchain
 - GNU make: Automation tool for compilation and build.
 - GNU Compiler Collection (GCC): Suite of compilers for several programming languages.
 - GNU Binutils: Suite of tools including linker, assembler and other tools.
 - GNU Debugger (GDB): Code debugging tool.
- **Software Development Kit (SDK):**
 - Framework + Toolchain + (documentation, samples, etc..)=> **Specific Target**
 - Ex. Android SDK
- **Integrated Development Environment (IDE):**
 - Mainly a graphical source code editor.
 - Capable of integrating a Toolchain or an SDK.
 - Ex. Eclipse & VisualStudio



In the search box in the Start menu,
type **C:\Windows\Globalization\MCT** and
enjoy these hidden wallpapers

Scripting Languages

- Scripting is an extension of the text-based command-line interface
- A collection or 'batch' of commands run in sequence to complete a task or set of tasks

Advantages:

- Automate both simple and complex tasks
- Used with make files and configurations
- Helps in developing useful tools

Scripting Vs Programming

- Mainly are interpreted
 - They are used to plug in parts together
 - Built to be fast to work with
- Mainly are compiled
 - They are used to build parts from scratch
 - Optimized in performance and size

Ex:

- Batch Script
- Perl Script
- VB Script

Ex:

- C
- C++
- Java

Python is considered to be both

Proprietary Vs Free Software

- Examples:
 - OS
 - Windows vs. Linux
 - Browser
 - Internet Explorer vs. Mozilla Firefox
 - Office Suite
 - Microsoft Office vs. OpenOffice
 - And the list goes on...
- How to choose:
 - Cost, Development Pace, Support,.....



You can organize the most
used tools and APPS to open from the task bar using
windows button + 1, 2, 3, ...

Notepad++

- Notepad++ is a free open source; source code editor.
- It is governed by GPL License.
- Notepad++ is a lightweight software.
- Very Useful plugins are available.
- For Main features:
 - <https://notepad-plus-plus.org/features/>

Eclipse

- Originally created by IBM in November 2001
- Industry leaders Borland, IBM, MERANT, QNX Software Systems, Rational Software, Red Hat, SuSE, TogetherSoft and Webgain formed the initial eclipse consortium.
- Eclipse Foundation was created in January 2004 as an independent not-for-profit corporation to act as the steward of the Eclipse community
- Eclipse have been named after different celestial bodies:
 - Ex. Europa, Ganymede, Callisto, Galileo, Luna, Mars and Neon.

Eclipse

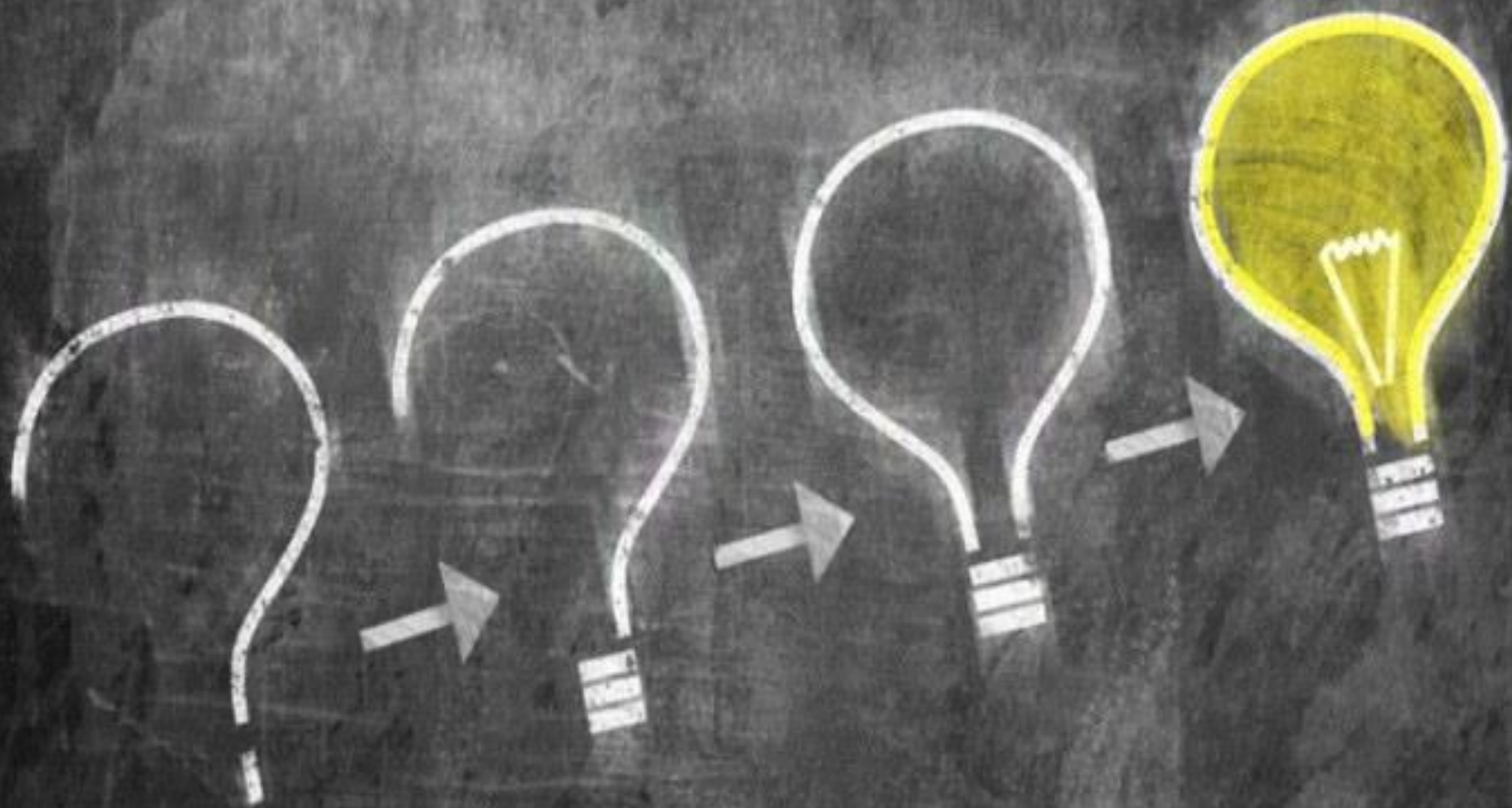
- Eclipse :
 - An open source free IDE
 - Extensible using plug-ins
 - Support many programming languages including C/C++
<https://www.eclipse.org/>
- Eclipse C/C++ Kepler will be used in this course
(<http://help.eclipse.org/kepler/index.jsp>).
- You will need a **Java runtime environment (JRE)** to use Eclipse
(Java SE 7 or greater is recommended)
<http://www.oracle.com/technetwork/java/javase/downloads/jre8-downloads-2133155.html>

MinGW

- Minimalist GNU for Windows: is a minimalist development environment for native Microsoft Windows applications.
- MinGW includes:
 - A port of the GNU Compiler Collection (GCC), including C, C++, ADA and Fortran compilers.
 - GNU Binutils for Windows (assembler, linker, archive manager).
 - GNU make utility

<http://www.mingw.org/>

- To install MinGW:
 - http://www3.ntu.edu.sg/home/ehchua/programming/howto/Cygwin_HowTo.html#mingw





Eng. Mohammad A.Hekal: embeddedgeek.34@gmail.com

Eng. Omar Soliman: Omar.Soliman@imtSchool.com