EMBEDDED SYSTEMS PROGRAMMING 2015-16

Introduction to the Course

What is an embedded system?











kindle

White the same was the same

PROLOGUE

hough I often looked for one, I finally had to admit that there could be no cure for Paris. Part of it was the war. The world had ended once already and could again at any moment. The war had come and changed us by happening when everyone said it couldn't. No one knew how many had died, but when you heard the numbers—nine million or fourteen million—you thought, Impossible. Paris was full of ghosts and the walking wounded. Many came back to Rouen or Oak Park, Illinois, shot through and carrying little pieces of what they'd seen behind their







A computer is designed to be flexible, while an embedded system performs one or a few dedicated functions



An embedded system has limited resources (CPU, RAM, storage...)

2004 PC



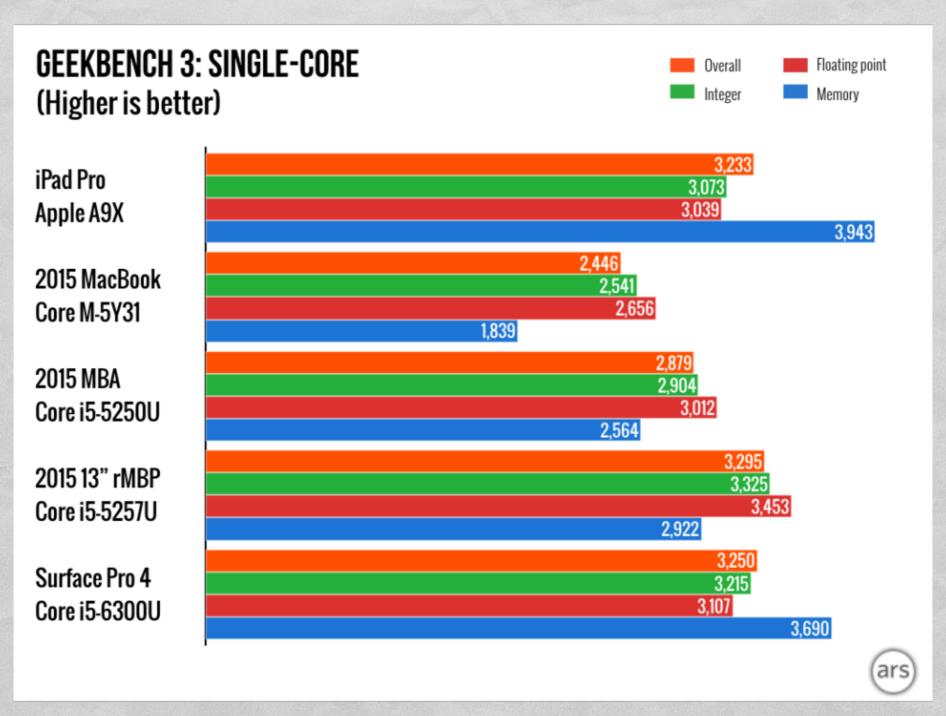
2.8 GHz CPU 512 MB RAM 120GB storage

2014 phone



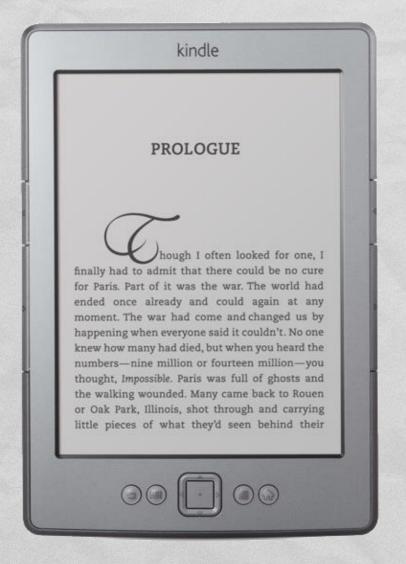
2.7 GHz CPU (4x) 3072 MB RAM 64GB storage

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An embedded system has real-time constraints

Winds and the same





Java ⇒ garbage collection

⇒ no deterministic response time

Embedded system are programmed with low-level languages (assembly or the like)



EMBEDDED SYSTEMS IN THIS COURSE

- Complex, mobile platforms
- Enormous growth and popularity in recent years
- High-level programming,
 leveraging on sophisticated libraries
- Languages: Java, C++





MOTIVATION (1/2)



C) John Stanmeyer

MOTIVATION (2/2)

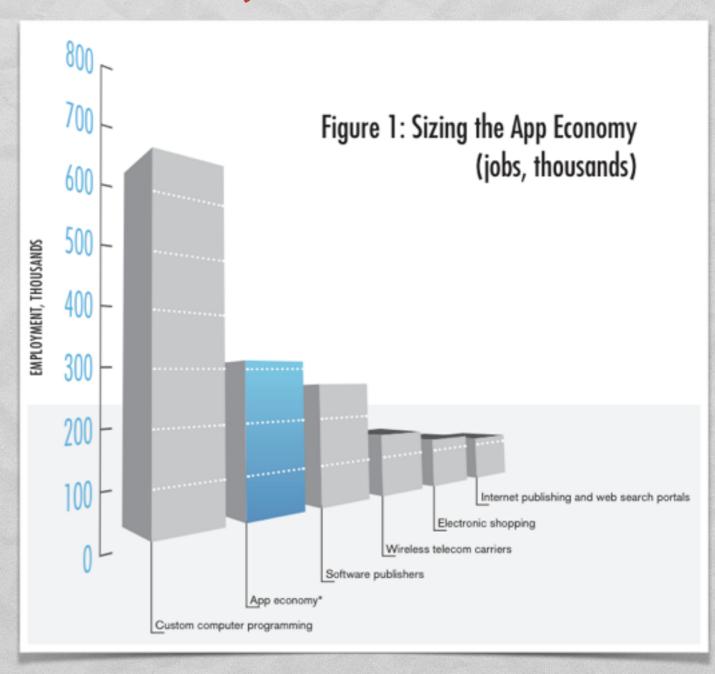
Hundreds of thousands of jobs in the

The second second

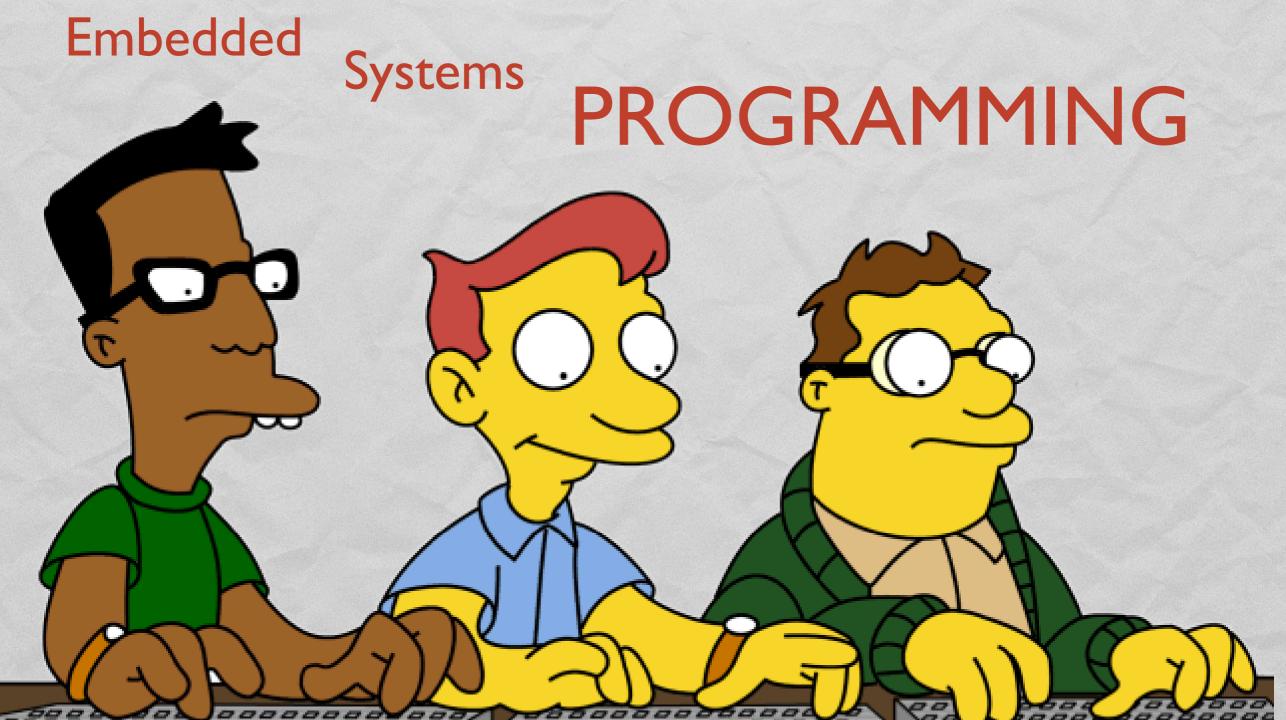
"App economy"

Data for the U.S.

Source: TechNet study, 02/2012



AIM OF THE COURSE



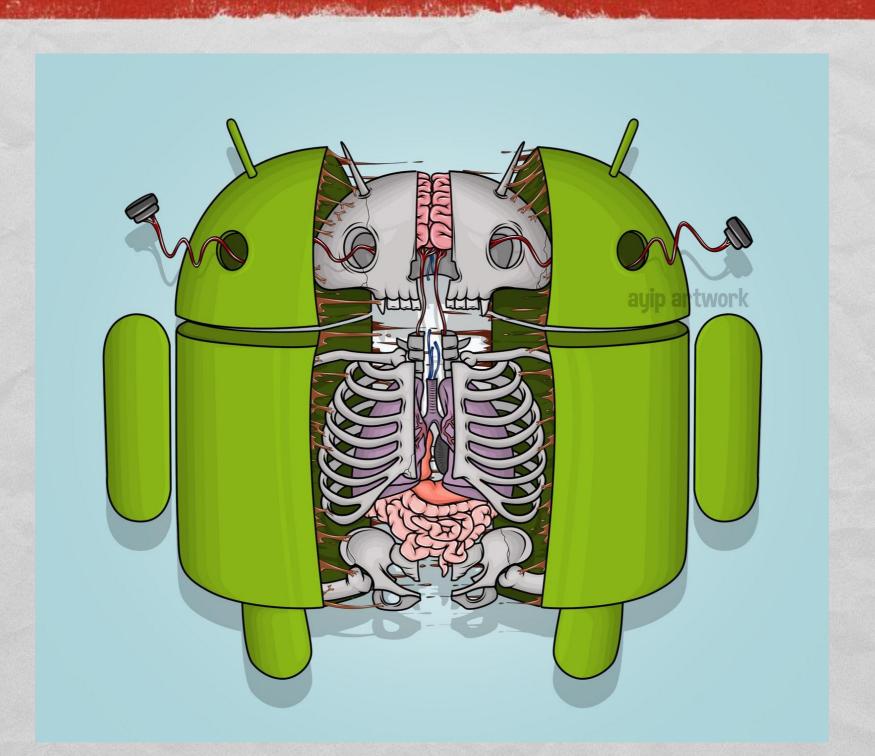
ANDROID



- ⇒ > 10⁹ devices sold in 2014
- Cheap devices available

- Open source*
- Developed apps can be installed at no cost

NOT THIS...



...BUT THIS



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