EMBEDDED SYSTEMS PROGRAMMING 2014-15

Introduction to the Course

What is an embedded system?











kindle

The second of the second

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

IS IT ALWAYS TRUE?



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

IS IT ALWAYS TRUE?

2004 PC



2.8 GHz CPU 512 MB RAM 120GB storage

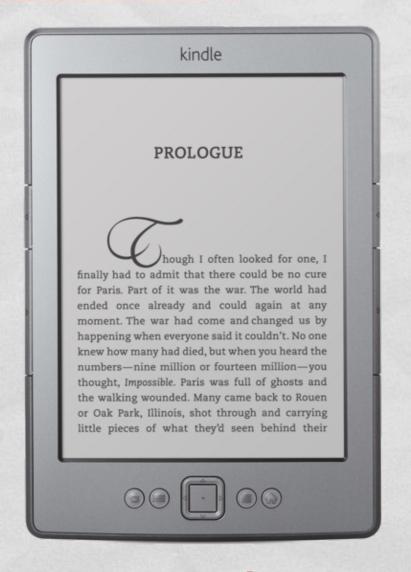
2014 phone



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

An embedded system has real-time constraints

IS IT ALWAYS TRUE?





Java ⇒ garbage collection

→ no deterministic respe

⇒ no deterministic response time

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

IS IT ALWAYS TRUE?



EMBEDDED SYSTEMS INTHIS COURSE

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





MOTIVATION (1/2)

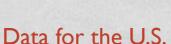


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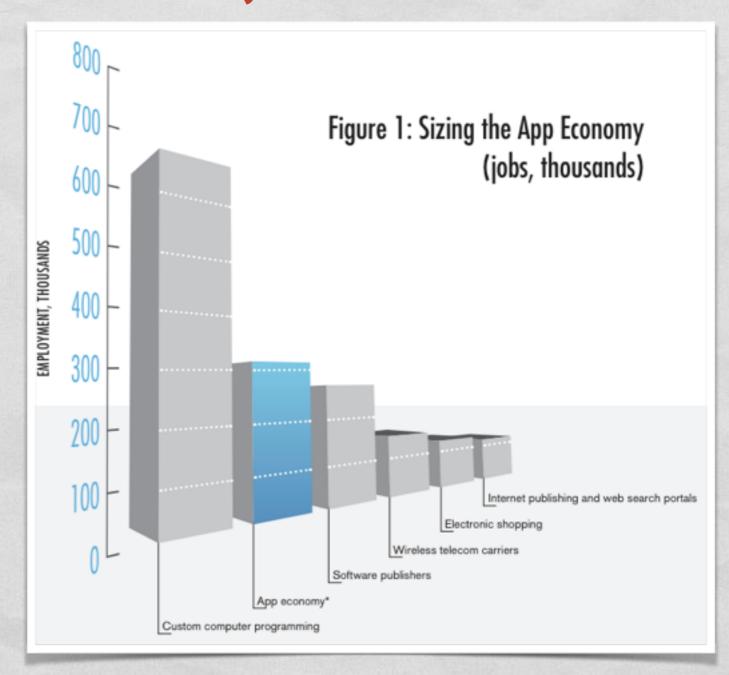
MOTIVATION (2/2)

Hundreds of thousands of jobs in the

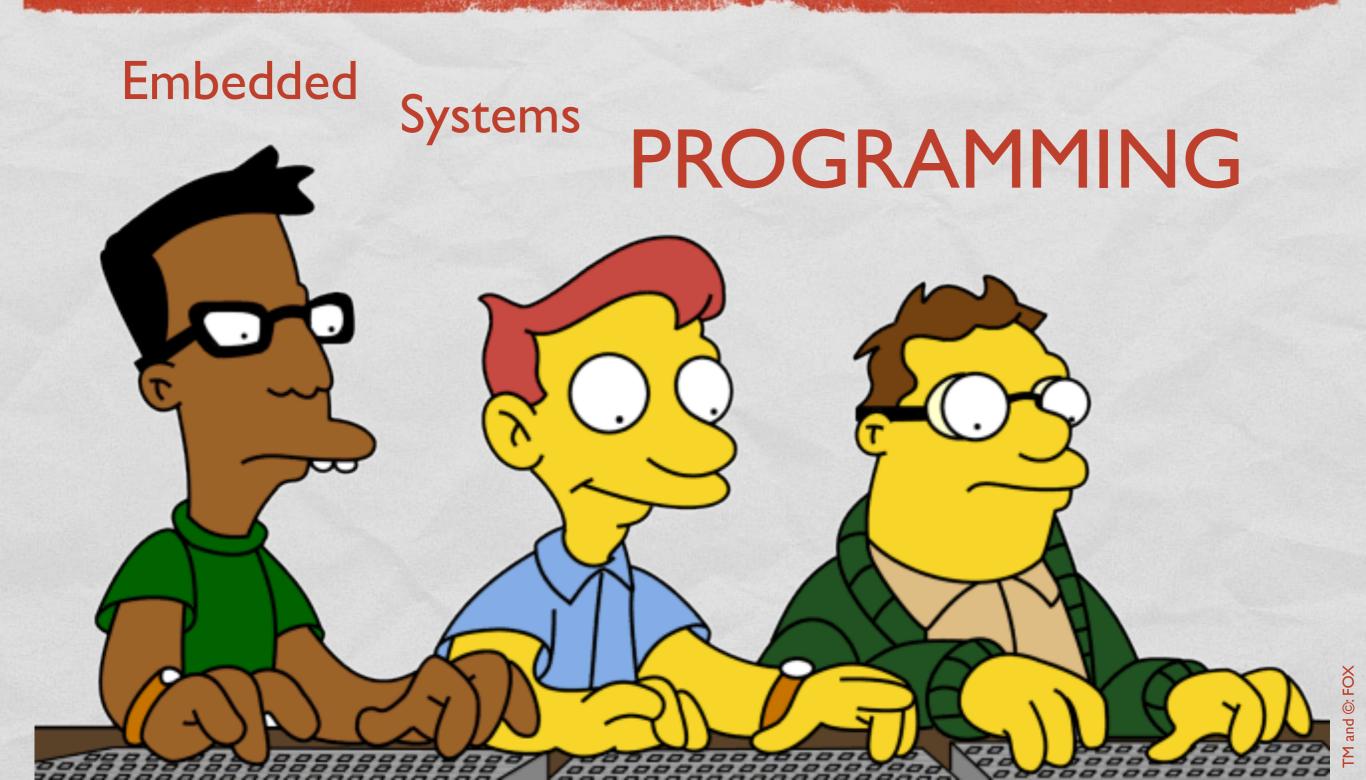
"App economy"



Source: TechNet study, 02/2012



AIM OF THE COURSE



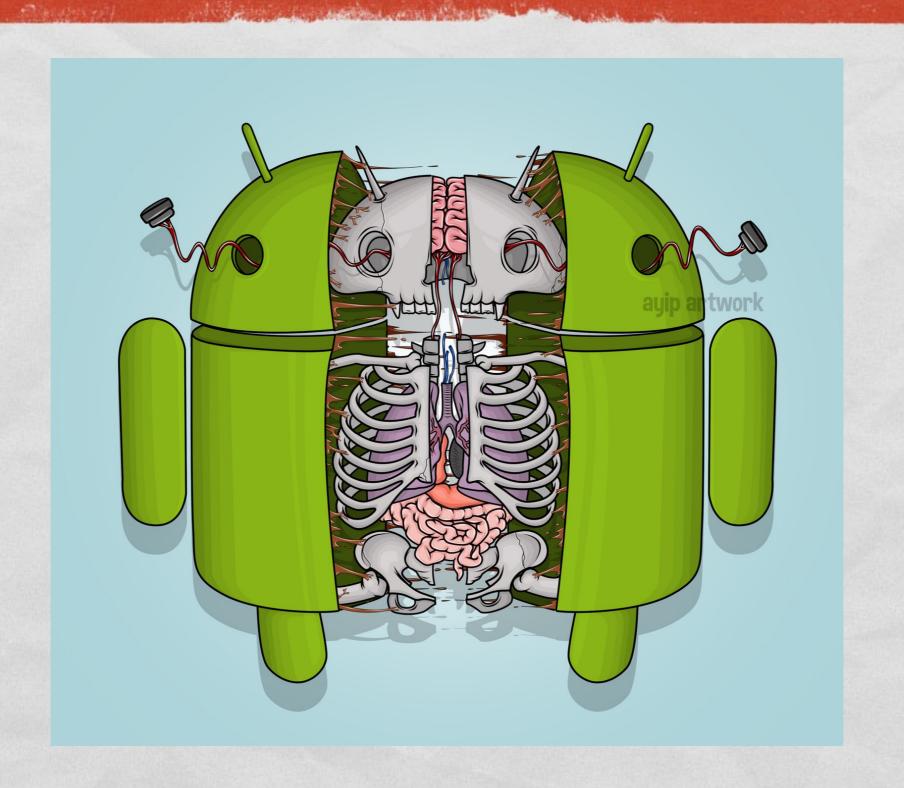
ANDROID



- >10⁹ devices sold in 2014
- Cheap devices available

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

NOT THIS...



...BUTTHIS



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