Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin

00–Introduction

CS1022 – Introduction to Computing II

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Learning Outcomes

On successful completion of CS1022 you will be able to:

Describe the characteristics, structure and operation of a microprocessor system, including the execution of subroutines and interfacing with external components and devices;

Translate between high-level programming language constructs, including data structures and subroutines, and their assembly language equivalents;

Design, construct, document and test assembly language programs to solve small-scale problems of moderate complexity by decomposing the problems into smaller parts and implementing solutions consisting of one or more assembly language subroutines;

Construct assembly language programs that can process input from and output to external devices.

Assessment

CS1021

- Introduction to Computing I
- 5 credits
  (out of 60 for the full year of your degree course)
- Labs (4)
- Assignments (2)
- 2 hour examination
  (worth 70% of CS1021)

CS1022

- Introduction to Computing II
- 5 credits
  (out of 60 for the full year of your degree course)
- Labs (4)
- Mid-Term Assignment
- 2 hour examination
  (worth 70% of CS1022)

Timetable

Lectures

Monday 14:00 in LB01

Wednesday 09:00 in LB04

Tutorials

Wednesday 11:00 in Joly

Labs

Friday 10:00, 11:00, 12:00 in LG35/LG36

Check which lab you should attend on Blackboard in the Labs section

New Lab Pairs (if your name is missing contact me)

Attendance and Deadlines

Attendance at all lectures, labs and tutorials is compulsory

In practice … catch up as quickly as you can (e.g. by working through lecture notes, tutorials and lab exercises in your own time)

- obtain material not available on-line from other students
- inform your tutor if you miss (or will miss) a major deadline or will be absent for more than a day

Zero marks for late coursework without explanation

You may be returned as Non-Satisfactory (see College Calendar) if you miss more than one-third of your Lectures, Labs or Tutorials, if you fail to submit more than one third of your Lab Exercises or if you fail to submit either term Assignment.

Your Own Work

When you submit work as part of an exercise or assignment, you are implying that it is your own work

DO indicate where you received help from someone other than a lecturer, teaching assistant or demonstrator

DO indicate where you have used other sources of information (e.g. websites or text books)

DON’T share your work with other students – in your year or any other year – you will make it harder for them to succeed in College

DO discuss your work with each other, ask another student for hints to solve problems, ask for assistance fixing bugs, etc.

DO be prepared to explain any work that you submit and expect us to use plagiarism detection tools such as TurnItIn

Taking credit for someone else’s work without giving them due recognition is a serious academic offence (plagiarism, see your course handbook)

Recipe for Success

Do all of the coursework (tutorials / labs / assignments)

Do the coursework yourself

If you don’t understand something, spend extra time studying it

If necessary, get help from classmates demonstrators or lecturer

Don’t wait before seeking help

Don’t wait for someone to tell you that …

- you haven’t handed in coursework
- you don’t understand something
- you haven’t been attending lectures / tutorials / labs

Don’t think that if you don’t understanding something now, you can fix it later before the exam … this module doesn’t work that way!

Laptops etc.

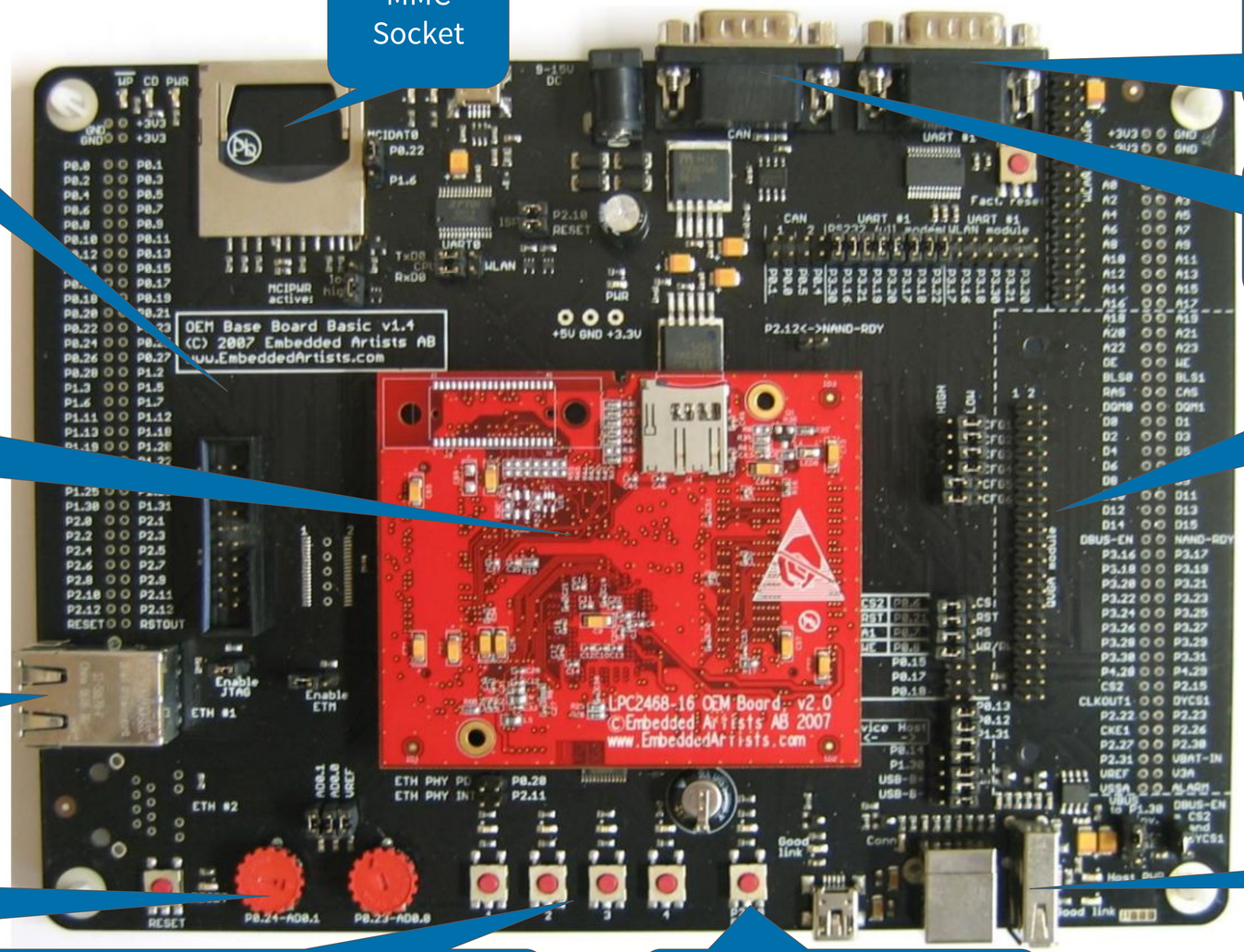
Laptops, tablets, phones etc. may not be used during lectures

There are exceptions (e.g. if you are registered with the College Disability Service and require the use of a laptop, just let me know)

You may use a laptop / tablet during tutorials for referring to lecture material, documentation, etc. only

You may use your laptop / tablet during labs

LPC2468 Development Kit



Embedded Artists LPC2468 OEM Base Board

MMC Socket

Universal Asynchronous Receiver/Transmitter (UART)

Controller Area Network (CAN bus)

Embedded Artists LPC2468-16 OEM Board

Touchscreen LCD Socket

RJ-45 Socket (Ethernet Module)

USB Sockets

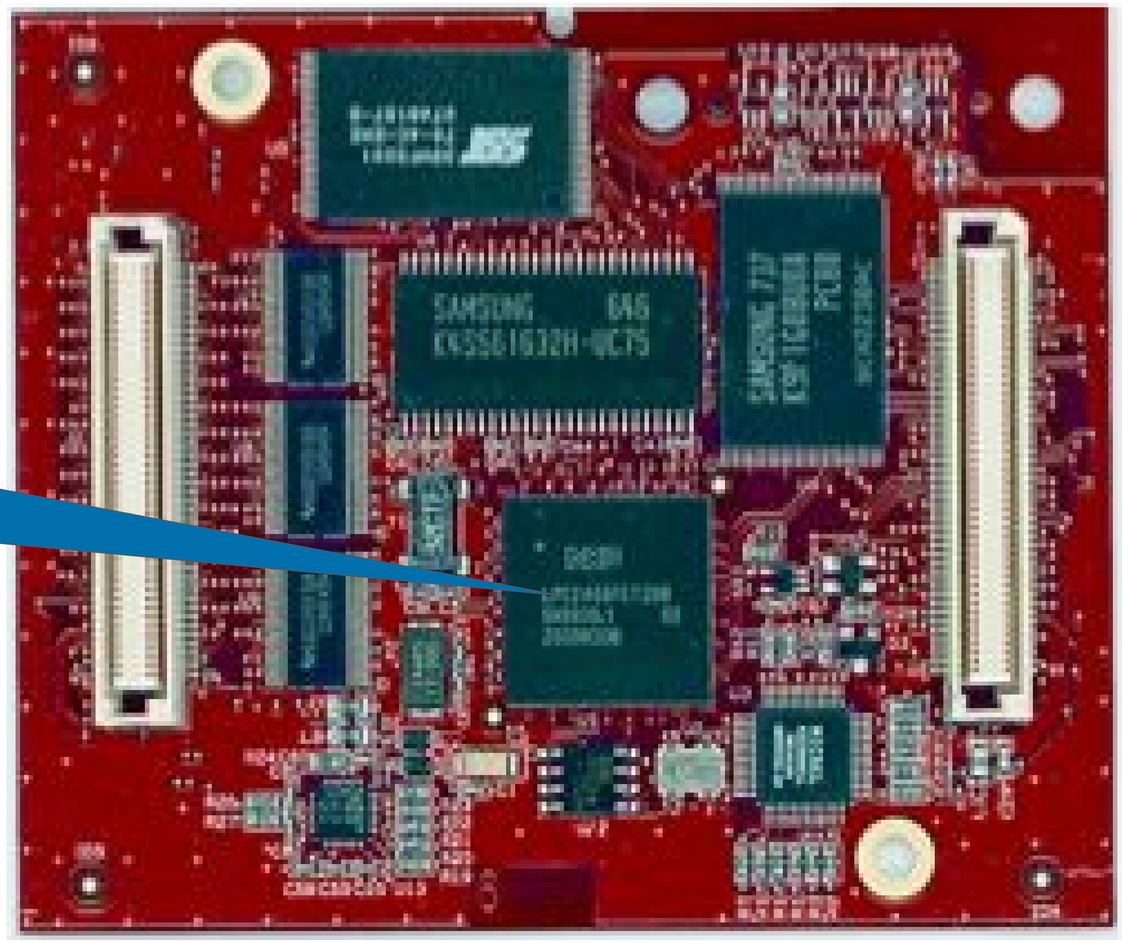
Potentiometer inputs (ADC)

Push-button inputs / LED outputs (I^2C)

Push-button input / LED output (GPIO / interrupt)

LPC2468 OEM Board

NXP LPC2468
Microcontroller



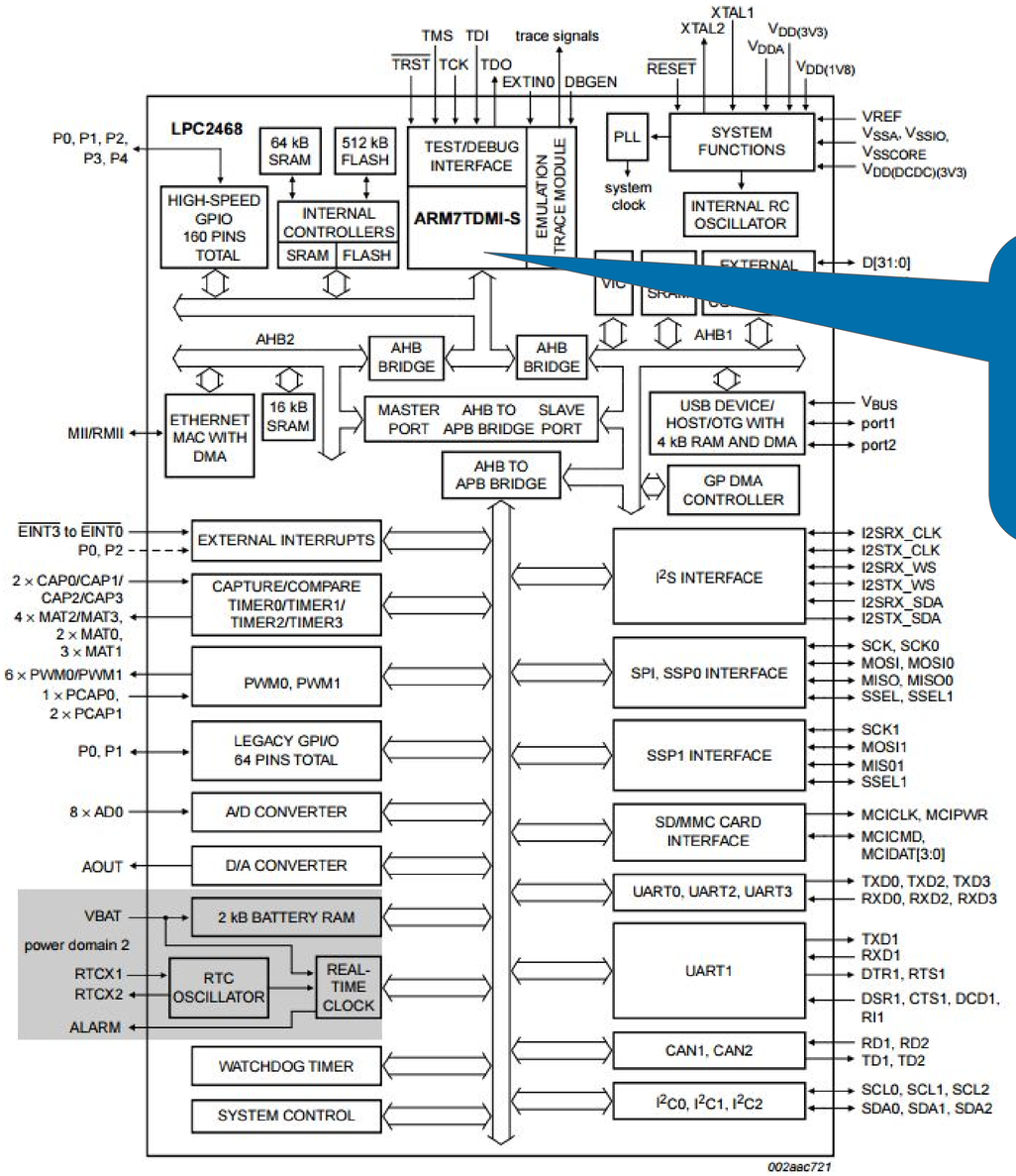
LPC2468 Microcontroller

"System-On-a-Chip"

Often used in embedded systems applications

Single chip integrates:

- Microprocessor
- Memory (RAM, ROM/Flash)
- I/O (UART, Ethernet, USB, I2C, SPI, CAN, SD, etc.)
- Mixed Signal (analog-to-digital, digital-to-analog)
- Support (clocking, "glue" logic)
- etc.



ARM7TDMI-S Microprocessor Core

LPC2468 User Manual

Successor to the ARM7TDMI …

ARM Cortex-M series (M0, M1, M3, M4, M7)

e.g. Nordic Semiconductors nRF51822

- ARM Cortex-M0 microprocessor core
- 2.4GHz radio (for Bluetooth Low Energy or ANT)
- 32kB RAM, 256kB flash memory
- Various other devices
- Integrated in a 6mm x 6mm 48-pin package (“chip”)

- Applications?