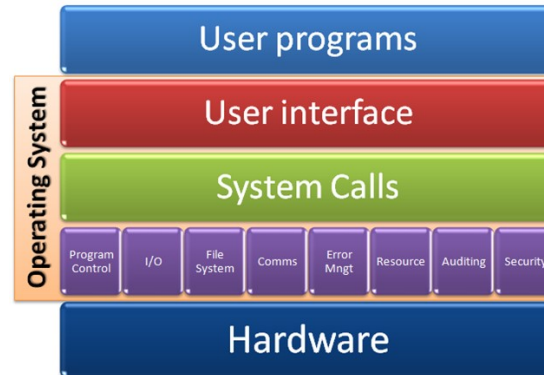
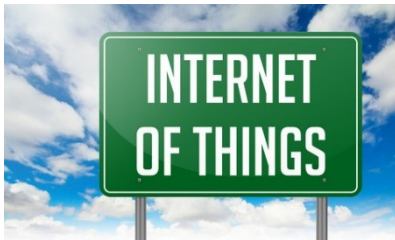


Introduction to ESW 1

Embedded Software



```
//-----  
TaskHandle_t co2Task_create(UBaseType_t priority, TickType_t  
periodInTicks, QueueHandle_t sensorReading) {  
    _periodInTicks = periodInTicks;  
    _sensorReadingQueue = sensorReading;  
  
    mh_z19_create(ser_USART3);  
  
    xTaskCreate(  
        co2Task  
        , "CO2Task" // A name just for humans  
        , configMINIMAL_STACK_SIZE // This stack size can be  
        checked & adjusted by reading the Stack Highwater  
        , NULL  
        , priority // Priority, with 3 (configMAX_PRIORITIES -  
        1) being the highest, and 0 being the lowest.  
        , &_taskHandle );  
  
    return _taskHandle;  
}  
  
//-----  
void co2Task(void *pvParameters) {  
    co2Task_initialise(_periodInTicks, _sensorReadingQueue);  
    while(1) {  
        co2Task_run();  
    }  
}
```

Agenda

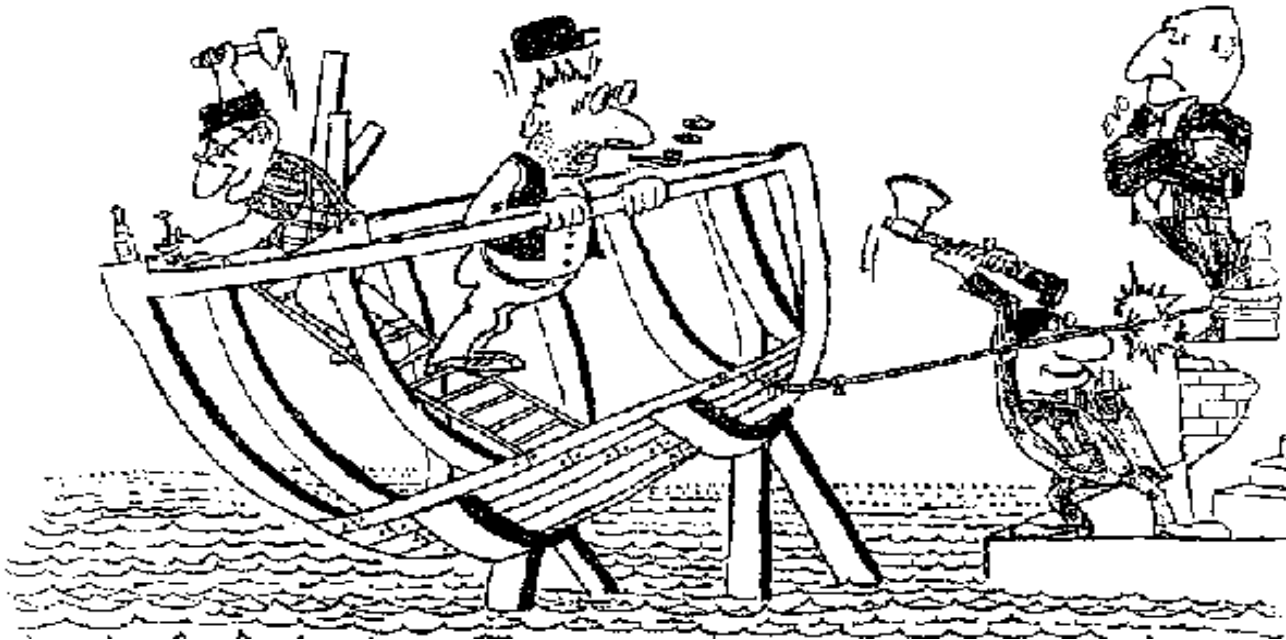
- Some practical things
- Short introduction to ESW 1
- Overall description of the course
- What you can expect from me – and what I expect from you

After this course you can

- Explain basic C programming artefacts and constructs
- Understand Memory Management in C
- Understand basic concepts of Real-time programming (FreeRTOS)
- Use C standard libraries and libraries for Hardware drivers etc.
- Understand pointers and simple data structures in C
- Understand Test Driven Development (TDD) in C
- Document C Real-time applications with UML
- Design and program a Real-time system in C using FreeRTOS

Consequences

- If you come to late – you miss some of the lesson
 - Wait outside class until next break!
- Exercises delivered to late will not be corrected



Deadline is
deadline!

ItsLearning

ItsLearning will be your source to information

- Session Plan
- Session Material
- Exercises
- Notes
- Links
- Hand-ins
- Tests
- Etc.

(hand-in via email will not be accepted!)

Textbooks and other material

- **[Kernigham, 1998]**: Brian W. Kernighan and Dennis M. Ritchie - The C programming Language
- **[Ferguson, 2019]**: George Ferguson - C for Java Programmers
- Online Tutorials, resources
- Additional notes will be supplied in the ESW1 page in ItsLearning

Textbook references

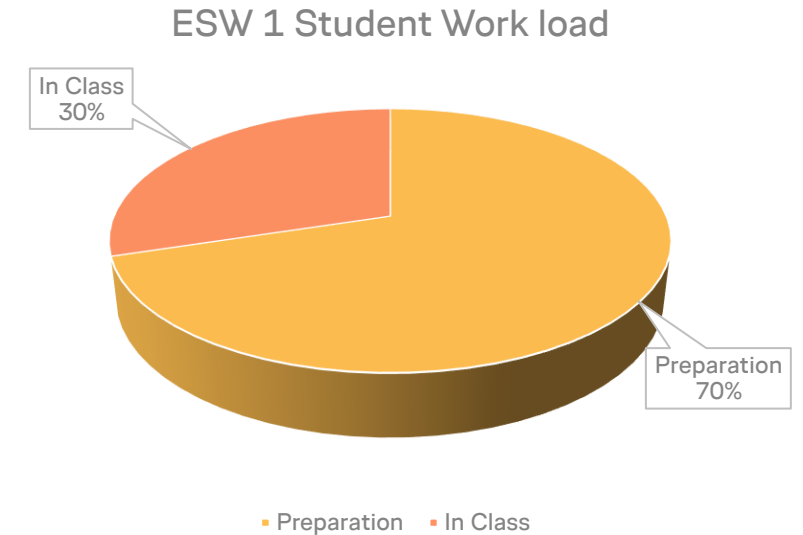
- **[Kernigham, 1998]**: Brian W. Kernighan and Dennis M. Ritchie - The C programming Language.
- **[Kernigham, 1998]**: will be used as reference to the textbook

E.g., Plan in ItsLearning:

<input type="checkbox"/>	Session	Date	Content	Preparation
<input checked="" type="checkbox"/>	1	8. feb 08:20 - 11:50	Introduction to ESW1 Introduction to C-Programming Installation of C-Tools Basic I/O, Tool Chain	Take a look at The History of the C-Language [Kernighan, 1998] : "C Programming Language": Introduction + Chapter 1, Chapter 7.1 and Chapter 8.1

Expected workload

- The course counts 5 ETCS point
- One ETCS point = 27.5 hours work
=> total 137.5 hours
- We are in the class 4 lessons per week in 11 weeks ($4 * 11 * 45 \text{ minutes} = 33 \text{ hours}$)
- For preparation/homework: $137.5 - 33 = 104.5 \text{ hours!}$



Conclusion:

Preparation/homework: ≈ 9 hours per week!!!!

Software development is learned by practising!

What you can expect from me

- Present and explain relevant and up-to-date material for you
- Show technics to solve problems
- Try my best to answer your questions
- Give you relevant assignments and feedback



What I expect from you?

- Prepare for classes
- Show up in class, and be active during lessons
- Make the assignments – programming is learned by practising!
- Help your fellow students if you can
- Ask when you don't understand things



How to study programming



- The most important thing to do is to practice!!
 - How did you learn to drive a bicycle?
 - Could you have learned it by reading a book or by looking at someone doing it?
- It's more important to implement the exercises than to read the text

Evaluation of the course (From course description)



Permit criteria's for attending examination:

Mandatory course activities completed and handed in

The student must have an attendance of at least 75% in order to qualify for the exam. Students who do not have at least 75% attendance will automatically fail the ordinary exam.



Internal examination



Three-hour written exam with marks according to the 7-point grading scale

<https://studienet.via.dk/sites/uddannelse/ict/Horsens/studymaterial/Pages/Semester-4.aspx>