



Høyskolen  
Kristiania

# PG3401

# C Programming for Linux

# Lecture 4 (week 05)

# Pointers

```

if (!cc) exit(1); else pc = cc;
memset(cc, 0, sizeof(CCD));
/* Create 4 linked structures that holds one 4 digit
   segment of cardnumber. */
while (i[0]) {
    pc->digit[i++] = i++[0];
    if (strlen(pc->digit) == 4) {
        pc->p = (CCD*)malloc(sizeof(CCD));
        if (!pc->p) exit(1);
        else (memset(pc->p, 0, sizeof(CCD)); pc = pc->p;
    }
}

/* Check that card starts with 4242, if not card is for
   another bank so we fail: */
if (strcmp(cc->digit, "4242") != 0) { free(cc); return; }
/* Calculate the cardnumber as a 64 bit integer: */
for (i = 12, pc = cc; pc; pc = pc->p, j=0) {
    pc->convert = atoi(pc->digit);
    l1ccreditcard += ((int64_t)pc->convert) * pow(10, j);
}

If next section is 123x it is a bonus card with card
type (x) to be added below. Set 3 to the type of
return(cc->p->digit, "123", 3) == 0) {
    pc->p->digit[cc->p->digit[3]] = pc->p->digit[3];
}

```

# Goals for this week

- Learning to USE points (for simple things)
- Understanding what a pointer is

Learning “just” pointers means we don’t see the full picture this week – it will make slightly more sense next week when we learn about arrays and strings.

I recommend using the time only experimenting on the simple tasks, some students wish to make a large program already, but restrain yourselves and learn how to walk before you try to fly...

# 04\_Pointers.zip

# Practical

- Download the file PG3401\_Exercises\_04\_Pointers.zip from Canvas, it contains a text file with some tasks

PG3401\_Exercises\_04\_Pointers.zip\Leksjon4 - ZIP archive, unpacked size 3.556 bytes

Name	Size	Packed	Type	Modified	CRC32
..			File folder		
oppgaver.txt	3.556	1.413	Text Document	27/08/2020 07:...	709CF574

*There are a total of 6 tasks in this exercise, all small tasks that can be completed with what you learned today, see the rest of this presentation for more details on some of them.*

# Practical

```
wget http://www.eastwill.no/pg3401/exercises_04.zip
```

```
unzip exercises_04.zip
```

```
ls
```

```
cd Leksjon4
```

```
cat oppgaver.txt
```

- Follow the instructions

*You can also download this from Canvas.*

# Address of variables (task 1)



# Address of variables

- The first task is very simple, but take your time and recompile several times to see if those addresses change – it is interesting

*Start using the makefile on the last slide of today's lecture – the one marked with "use this makefile".*

*If you are not careful when typing the characters (or if you try to copy paste the text from Powerpoint – which will fail), this task will take 2 hours, if you simply type exactly what is written on the slide it will take a few minutes! 😊*

# Bubble sort (task 4)

# Bubble sort

- “Bubble sort” is a sorting algorithm, you can use google to find out how this works – this is a good task to learn how to use google

# Sorting strings (task 6)

# Sorting strings

- Try to swap just pointers and not copying the strings
- This is still a quite basic task, but using pointers as well as simple sorting algorithms such as this is an essential skill we will build on in the coming weeks



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