Karlsruher Institut für Technologie

Institut für Technik der Informationsverarbeitung ITIV

Dr.-Ing. Jens Becker (jens.becker@kit.edu) ***Dipl.-Inform. Tanja Harbaum*** *(harbaum@kit.edu)*

Institut für Technik der Informationsverarbeitung (ITIV)

Communication Systems and Protocols

Exercise 1

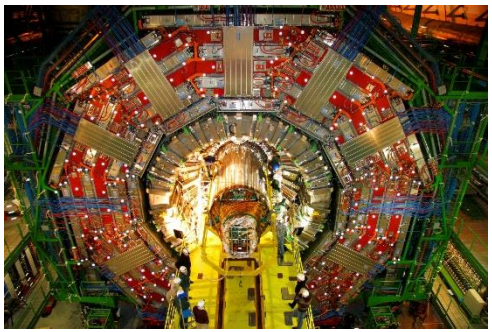
General Information

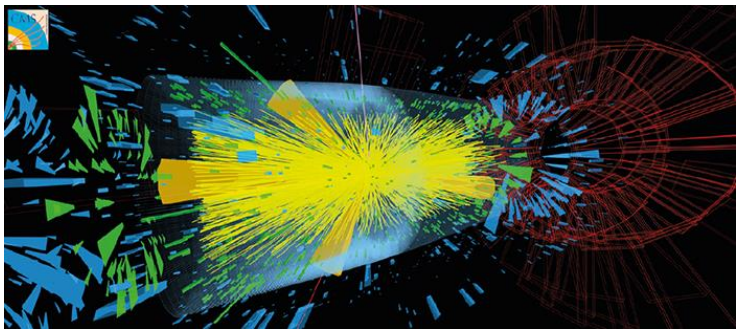
Communication Systems and Protocols Exercises

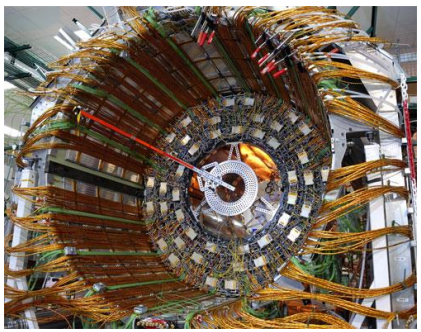
- Lecturer:

Dipl.-Inform. Tanja Harbaum
Institute for Information Processing (ITIV)
Building 30.10, Room 126
Email: harbaum@kit.edu

- Consultation-hours: After the lecture or by appointment
- research topic: Level 1 Track Trigger CMS detector (CERN)







General Information CSP

- Announcements: (lecture, exercise, examinations)

  Building 30.10, top floor (billboard)

  https://ilias.studium.kit.edu

- Examination: Monday, July 25th 2015

  written with formula sheet
  (1 DIN-A4 sheet, handwritten)

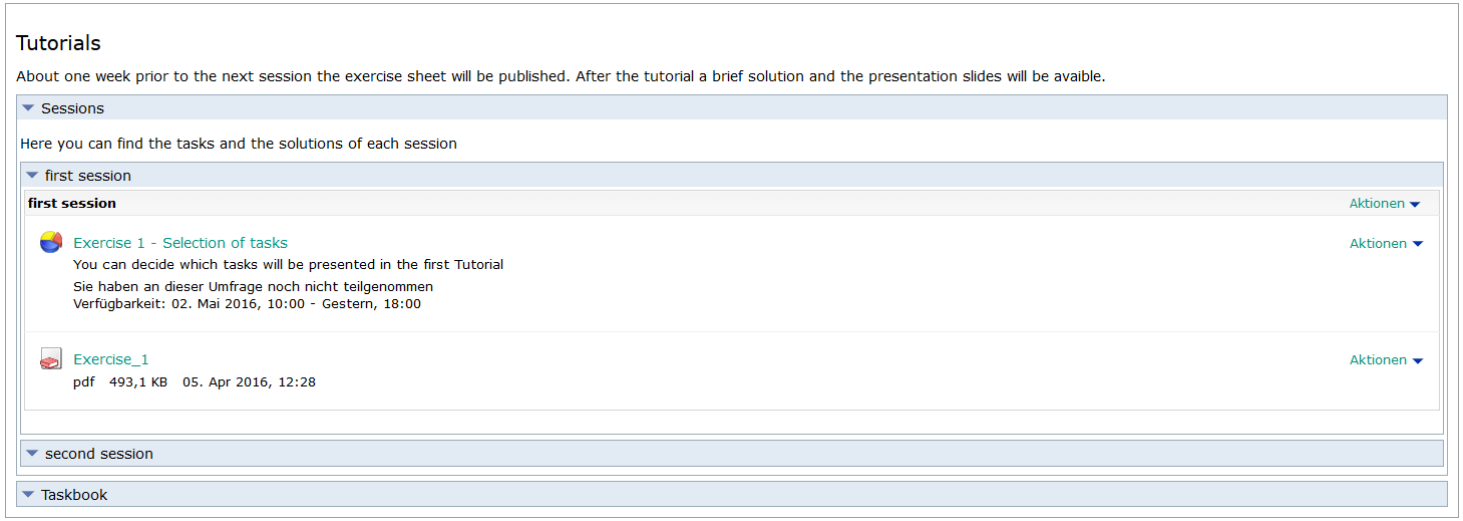
Schedule CSP

Monday: 09:45 – 11:15 (MTI)	Thursday: 09:45 – 11:15 (EAS)
18.04.2016 – Lecture	21.04.2016 – Lecture
25.04.2016 – Lecture	
02.05.2016 – Lecture	05.05.2016 – Ascension Day
09.05.2016 – Lecture	12.05.2016 – Exercise 1
16.05.2016 – Pentecost week	19.05.2016 – Pentecost week
23.05.2016 – Lecture	26.05.2016 – Corpus Christi
30.05.2016 – Lecture	02.06.2016 – Exercise 2
06.06.2016 – Lecture	
13.06.2016 – Lecture	16.06.2016 – Exercise 3
20.06.2016 – Lecture	
27.06.2016 – Lecture	30.06.2016 – Exercise 4
04.07.2016 – Lecture	
11.07.2016 – Lecture	14.07.2016 – Exercise 5
18.07.2016 – Exercise 6	21.07.2016 – Question time

Monday, 25.07.2016: CSP - EXAMINATION

Procedure

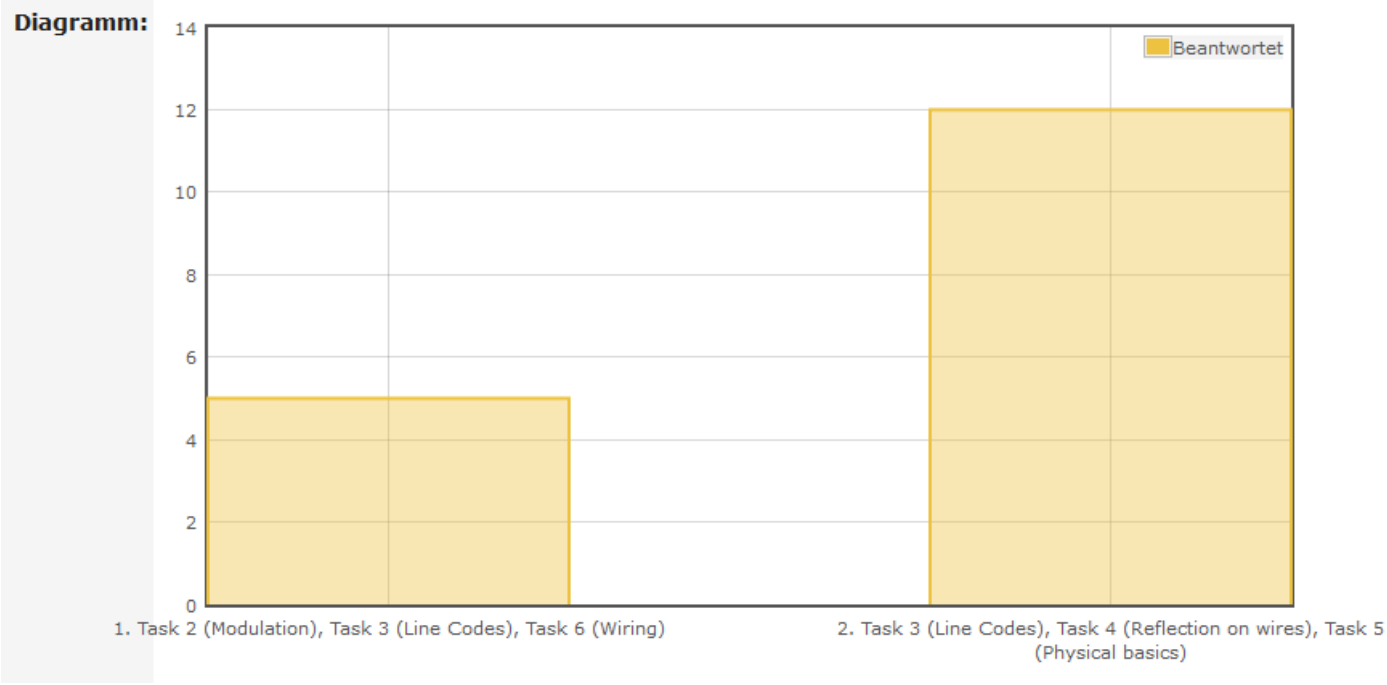
- The exercise sheet will be published a week before (ILIAS)



- You can decide which tasks will be presented (ILIAS survey)
  - After the exercise a solution sheet with all tasks will be published
  - The published solution is brief
- knowledge questions and simple questions are often part of the clicker session (lecture)

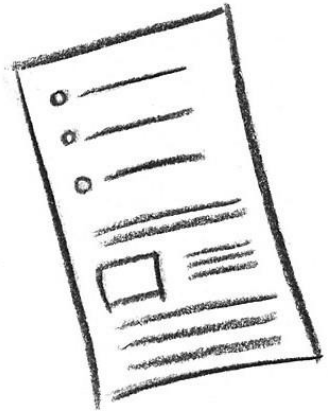
Results of the survey

- Line codes, reflection on wires and physical basics



Procedure

- We will talk about the task

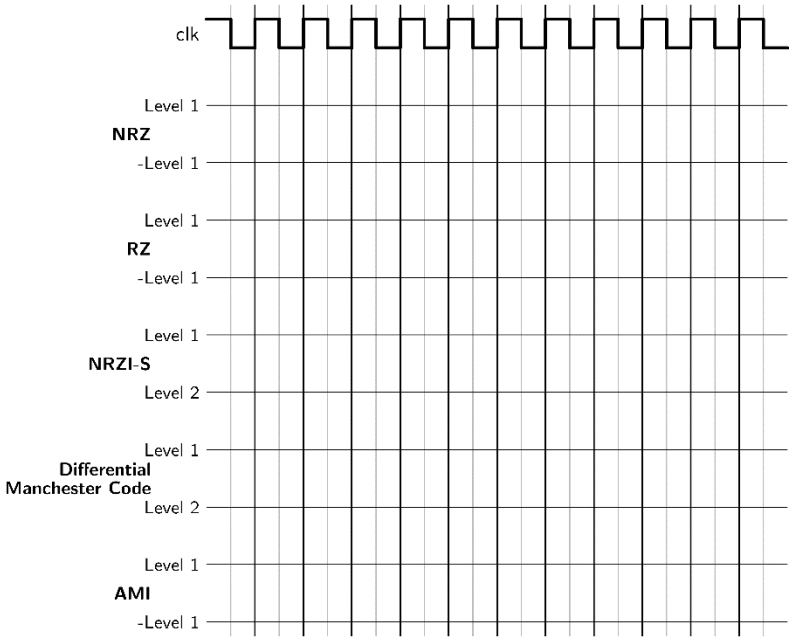


- You work in small groups and solve the task

- We dicuss one possible solution

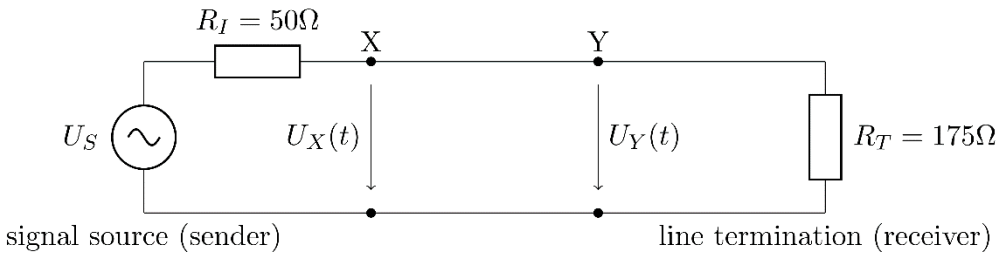
Images: http://www.thilo-krapp.com/

Task 1: Line Codes



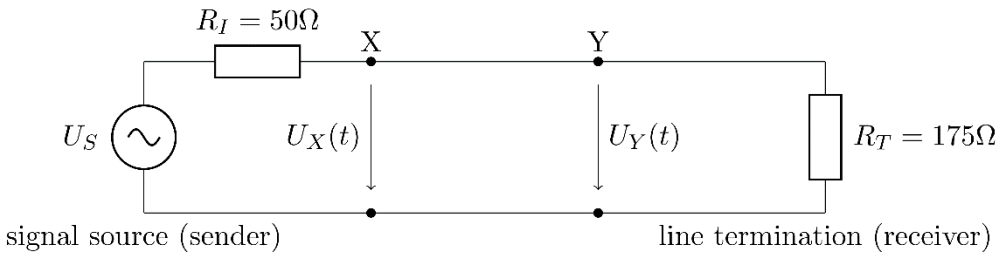
10100000111111000010111

Task 2: Reflection on wires



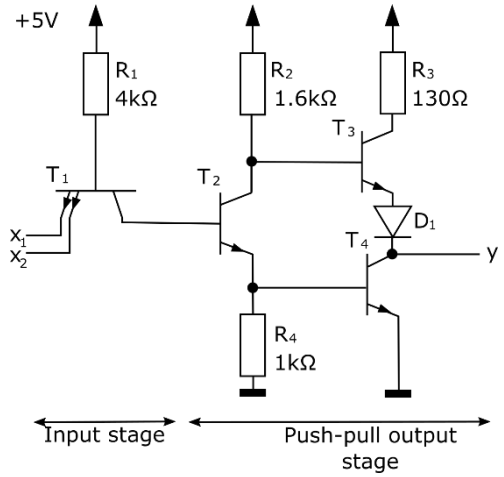
Which voltage appaers at the points X and Y after an infinite amount of time?

Task 2: Reflection on wires



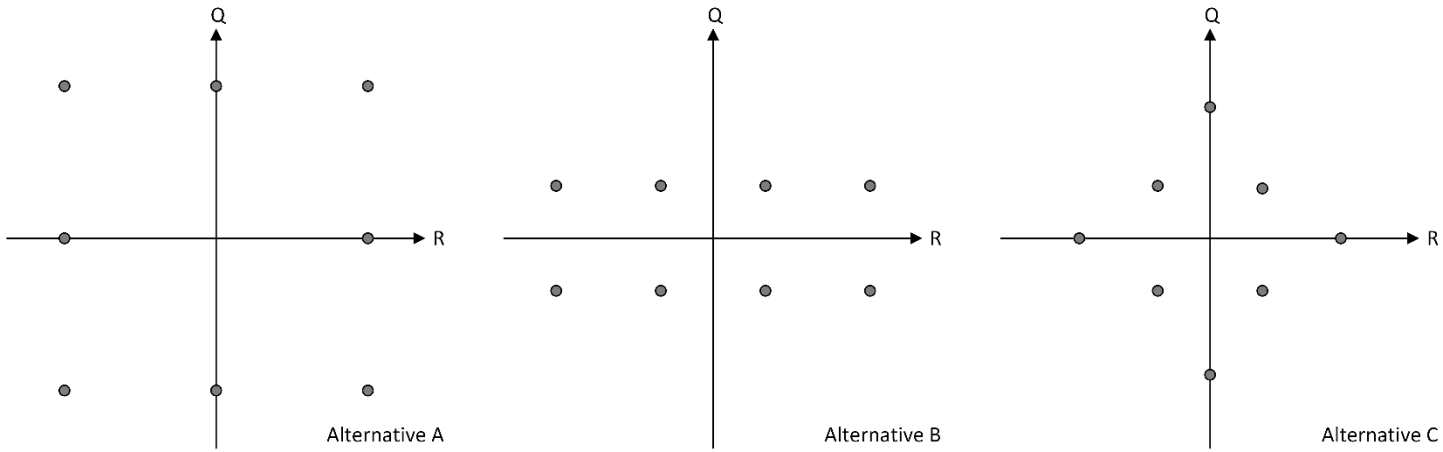
Calculate the voltage at point X at time t=2

Task 3.1: TTL logic



Task 3.2: Differential Signals

Task 3.3 Modulation



Task 3.4: Channel capacity

Task 3.5: Signal Conversion