1: Introduction

- Slide 4: Replace “Taksi” by “Tacsi”.

2.1: Grammars for Defining Syntax

- Slide 9: Replace in 1. $u_n$ by $u_m$. Add in the definition of $uv$ a comma between $u_m$ and $v_1$.
- Slide 31: $B$, $C$, $H$ are as well nonterminals, and $c$ is as well a terminal. Add them in the definition of the grammar as a tuple $G^{a\ b\ c\ e} = (\{a, b, c\}, \{S, B, C, H\}, S, \cdots)$ modify the line starting with terminals to terminals $a, b, c$ and the line starting with nonterminals to nonterminals $S, B, C, H$.
- Slide 50: Replace $Program \rightarrow Id := Aexp$ by $Program \rightarrow Id := AExp$.
- Slide 51: Replace $Id := Identifier$ by $Id := AExp$.
- Slide 57: replace in $\langle BExp \rangle ::= \langle BExp \rangle BOp2 \langle BExp \rangle$ $BOp2$ by $\langle BOp2 \rangle$ to obtain $\langle BExp \rangle ::= \langle BExp \rangle \langle BOp2 \rangle \langle BExp \rangle$
2.2: The Chomsky Hierarchy and Regular Languages

- Slide 7: Definition, 3.: Replace “Type 4” by “Type 3”.
- Slide 8, Remark: replace the last “regular” by “unrestricted”, so it should read: $L$ regular $\Rightarrow L$ context-free $\Rightarrow L$ context-sensitive $\Rightarrow L$ unrestricted.

2.3: Finite State Automata

- Slide 24: Replace in the last line “$\delta^*(q, w) = \bigcup_{i=1}^{n} \delta^*(q_i, w')$” by “$\delta^*(q, w) = \bigcup_{i=1}^{n} \delta^*(q_i, w')$” (i.e. replace last occurrence of $w$ by $w'$).
- Slide 32: The transitions refer to the wrong alphabet and the resulting states need to be put into {···}:
  
  So the transitions should be:
  
  transitions
  
  $\delta(q_0, 1) = \{q_1\}$
  $\delta(q_0, 2) = \{q_2\}$
  $\delta(q_0, 3) = \{q_3\}$.

- Slide 76: State $S$ should be marked as start state.
- Slide 77: State $S$ should be marked as start state.
- Slide 120: Replace in line 2 “Then there exist a fixed number $k$” by “Then there exist a fixed number $n$”
- Slide 122: Replace all occurrences of the variable $k$ by $n$.
- Slide 124: Replace all occurrences of the variable $k$ by $n$.

2.4: Derivation Trees for Context Free Grammars

- Slide 32: Replace “A tree with root $w$” by “A forest with root $w$”.
- Slide 33: There should have been 2 parts of the lemma, denoted by (1) and (2). They got lost. The lemma should read as follows:

  Lemma

  Let $G = (T, N, S, P)$ be a CFG, $w \in (T \cup N)^+$, $w' \in T^*$.

  (1) Assume there are two different derivation forests with root $w$ and frontier $w'$. Then there exist two different left-most and two different right-most derivations of $w \Rightarrow^* w'$.

  (2) Assume there are two different left-most derivations or two different right-most-derivations of $w \Rightarrow^* w'$. Then there exist two different derivation forests of with root $w$ and frontier $w'$.

- Slide 34, Theorem. Replace in (1) the word root by label.
- Slide 35 - 37: Replace in the headline (1) $\Rightarrow$ (2) by (1).
Bullet points:

Slide 38: Replace in the headline (2) ⇒ (1) by (2).

Slide 42: Replace Program −→ Id := Aexp by Program −→ Id := AExp.

Slide 49, 52, 116, 118: Same correction.

Slide 51/52: The grammar used is ambiguous (Why?). The grammar should read as follows:

- **Program** → **UnmatchedIf**
- **Program** → **MatchedIf**
- **MatchedIf** → **Id** := **AExp**
- **MatchedIf** → if **BExp** then **MatchedIf** else **MatchedIf**
- **UnmatchedIf** → if **BExp** then **Program**
- **UnmatchedIf** → if **BExp** then **MatchedIf** else **UnmatchedIf**

Now modify on Slide 51 in the third bullet:

- MatchedIf. They match if_then_else_ and both the if-clause and else-clause can only be instantiated by a MatchedIf.
- UnmatchedIf. They match if_then_ and an if_then_else_with a matched if and an unmatched else clause.

Slide 53: $s_1, s_2$ need to belong to **MatchedIf**, so replace the **Program** above it by **MatchedIf**.

IV.2: The URM

- Slide 20: Add in the row for $R_0$ after $I_0$ the value 2 (as it is used for $I_1$).
- Slide 22, line 1: Replace U-program by URM-program.

IV.3: The Turing Machine

- Slide 36: Replace $(01010)_2 = 12$ by $(01010)_2 = 10$.
- Slide 84: Note that $\chi_M$ was introduced on slide 77. There we used the notation $\vec{x}$, which stands for $x_1, \ldots, x_n$.
- Slide 96: Replace “We will define below a computable function $f : \mathbb{N} \to \mathbb{N}$, s.t. $f \neq \{e\}$” by “We will define below a computable function $f : \mathbb{N} \to \mathbb{N}$, s.t. for all $e \in \mathbb{N}$ we have $f \neq \{e\}$.”