

# CS305-Homework Assignment 2

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End Date: 11/02/2019

## Context Free Grammar for CSML Language

$$\langle prog \rangle \rightarrow \langle elementList \rangle$$
$$\begin{aligned} \langle elementList \rangle &\rightarrow \langle element \rangle \langle elementList \rangle \\ &\quad | \langle element \rangle \\ &\quad | \epsilon \end{aligned}$$
$$\begin{aligned} \langle element \rangle &\rightarrow \langle beginCourse \rangle \langle classList \rangle \langle endCourse \rangle \\ &\quad | \langle beginConstraint \rangle \langle itemList \rangle \langle endConstraint \rangle \end{aligned}$$
$$\langle beginCourse \rangle \rightarrow tOPEN \ tCOURSE \ \langle courseAttrList \rangle \ tCLOSE$$
$$\langle endCourse \rangle \rightarrow tEND \ tCOURSE \ tCLOSE$$
$$\begin{aligned} \langle courseAttrList \rangle &\rightarrow \langle courseAttr \rangle \langle courseAttrList \rangle \\ &\quad | \langle courseAttr \rangle \end{aligned}$$
$$\begin{aligned} \langle courseAttr \rangle &\rightarrow tCODE \ tSTRING \\ &\quad | \ tNAME \ tSTRING \\ &\quad | \ tTYPE \ tSTRING \end{aligned}$$
$$\begin{aligned} \langle classList \rangle &\rightarrow \langle class \rangle \langle classList \rangle \\ &\quad | \langle class \rangle \end{aligned}$$
$$\langle class \rangle \rightarrow \langle beginClass \rangle \langle meetingList \rangle \langle endClass \rangle$$
$$\langle beginClass \rangle \rightarrow tOPEN \ tCLASS \ \langle classAttrList \rangle \ tCLOSE$$
$$\langle endClass \rangle \rightarrow tEND \ tCLASS \ tCLOSE$$

$$\begin{aligned} \langle classAttrList \rangle &\rightarrow \langle classAttr \rangle \langle classAttrList \rangle \\ &\quad | \quad \langle classAttr \rangle \end{aligned}$$

$$\begin{aligned} \langle classAttr \rangle &\rightarrow tSECTION \ tSTRING \\ &\quad | \quad tINSTRUCTOR \ tSTRING \\ &\quad | \quad tCAPACITY \ tNUM \\ &\quad | \quad tCRN \ tNUM \end{aligned}$$

$$\begin{aligned} \langle meetingList \rangle &\rightarrow \langle meeting \rangle \langle meetingList \rangle \\ &\quad | \quad \langle meeting \rangle \end{aligned}$$

$$\langle meeting \rangle \rightarrow \langle beginMeeting \rangle \langle meetingAttrList \rangle \langle endMeeting \rangle$$

$$\langle beginMeeting \rangle \rightarrow tOPEN \ tMEETING$$

$$\langle endMeeting \rangle \rightarrow tSELF$$

$$\begin{aligned} \langle meetingAttrList \rangle &\rightarrow \langle meetingAttr \rangle \langle meetingAttrList \rangle \\ &\quad | \quad \langle meetingAttr \rangle \end{aligned}$$

$$\begin{aligned} \langle meetingAttr \rangle &\rightarrow tSTART \ tTIME \\ &\quad | \quad tEND\_A \ tTIME \\ &\quad | \quad tDAY \ \langle day \rangle \end{aligned}$$

$$\begin{aligned} \langle day \rangle &\rightarrow tMON \\ &\quad | \quad tTUE \\ &\quad | \quad tWED \\ &\quad | \quad tTHU \\ &\quad | \quad tFRI \end{aligned}$$

$$\langle beginConstraint \rangle \rightarrow tOPEN \ tCONSTRAINT \ tCLOSE$$

$$\langle endConstraint \rangle \rightarrow tEND \ tCONSTRAINT \ tCLOSE$$

$$\begin{aligned} \langle itemList \rangle &\rightarrow \langle item \rangle \langle itemList \rangle \\ &\quad | \quad \langle item \rangle \end{aligned}$$

$\langle item \rangle \rightarrow \langle beginItem \rangle \langle endItem \rangle$

$\langle beginItem \rangle \rightarrow tOPEN\ tITEM\ \langle itemAttr \rangle$

$\langle endItem \rangle \rightarrow tSELF$

$\langle itemAttr \rangle \rightarrow tCODE\ tSTRING$   
                   $| \ tCRN\ tNUM$