1.

The goal of this exercise is to identify dynamic systems using input-output data. Load the data 'dataAssign05.mat'. Data has been collected from five different dynamic systems. Input-output datasets are (u_1 , y_1), (u_2 , y_2), (u_3 , y_3), (u_4 , y_4), and (u_5 , y_5). The sampling frequency for all of the datasets has been 1 Hz. Identify polynomial models of the mentioned systems using MATLAB System Identification Toolbox. You should explicitly select a model as your final answer for each input-output dataset. You are supposed to answer the following questions for each system.

a) What is your selected model structure?

b) Present the resulted plots and information related to validation procedure for your selected model structure. (**Hint**: For instance residual analysis plots, poles and zeros plot, variance analysis information, etc.)

c) What are the alternative model(s) for the data if you think there are any?

Save the final identification session for each dynamic system as "sys01.sid" for (u_1 , y_1), "sys02.sid" for (u_2 , y_2), "sys03.sid" for (u_3 , y_3), "sys04.sid" for (u_4 , y_4), and "sys05.sid" for (u_5 , y_5). **Include a snapshot of your final sid files in your report.**

The grading of this assignment will be performed based on the resulted model structures and their orders, as well as the identification path.

(2 points for each system, total 10 points)

What to return?

You are supposed to submit your assignment to the related link for assignment 5 in MyCourses. Your submission should include one zip file "Assign05_student number.zip" consisting of a pdf file "Assign05_student number.pdf", and the following MATLAB files: "sys01.sid", "sys02.sid", "sys03.sid", "sys04.sid", and "sys05.sid".

The hard deadline for submission of this assignment is 24.11.2019 at 23:59.