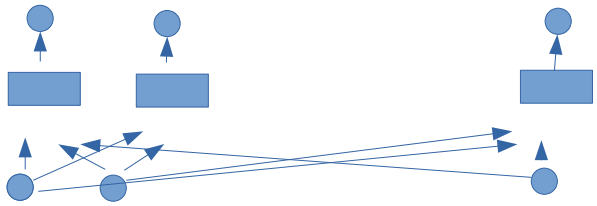
Machine Learning 24/25
Homework 1

20%	20%	30%	30%
HW1	HW2	MID	FIN

Due 24/10/2024

Option 1.
-Create a python script that
a) inputs a dataset DS (N symbolic variables), defines N different MLP with N inputs and 1 output (each different MLP will have as output one of the N variables).
b) trains the MLPs each on the dataset DSi obtained from DS for learning output variable Xi given all others as input.
-Join the trained architectures by identifying input and joining output (the result will be an architecture with N inputs and N outputs as in the picture.



-Report about your experimentation in searching for optimal architecture hyper-parameters on Letter Recognition Dataset and one other of your choice, and tests in using the architecture for the missing value problem.

Option 2. Create a python script that
a) inputs a dataset DS (N symbolic variables), *one-hot* encodes DS into a binary dataset with M binary variables.
b) creates an MLP with M inputs and M outputs and trains it on a dataset obtained by erasing values in the original.
-Report about your experimentation in searching for optimal architecture hyper-parameters on Letter Recognition Dataset and one other of your choice. Also experiment about possible different trainings obtained with different ways to produce training samples (number of erased values per sample, …) and test the architecture for the missing value problem.