

# Introduction to exercises

# What's on today?

(optional) Introduction to Python

(optional) Introduction to numpy and matplotlib

Introduction to Neural Networks

# Introduction to Neural Networks

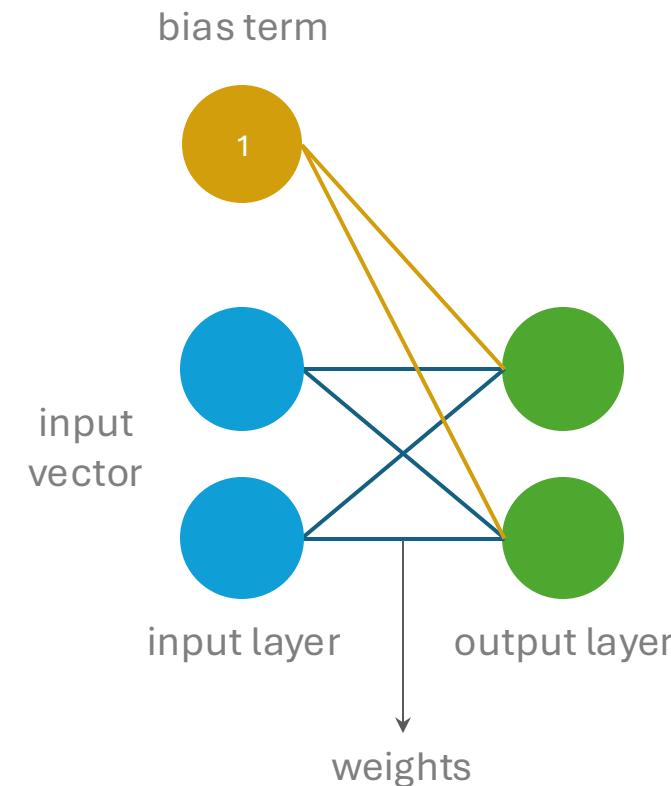
1.1 Read tabular data for a binary classification task.

Study Hours	Previous Exam Score	Pass/Fail
4.37	81.88	0
9.55	72.16	1
7.58	58.57	0
6.38	88.82	1
2.40	81.08	0
2.40	49.75	0
1.52	94.65	0

# Introduction to Neural Networks

1.1 Read tabular data for a binary classification task.

1.2 Build the model with `nn.Linear()`. Understand what a layer, linear connections, weights, biases, and logits are.

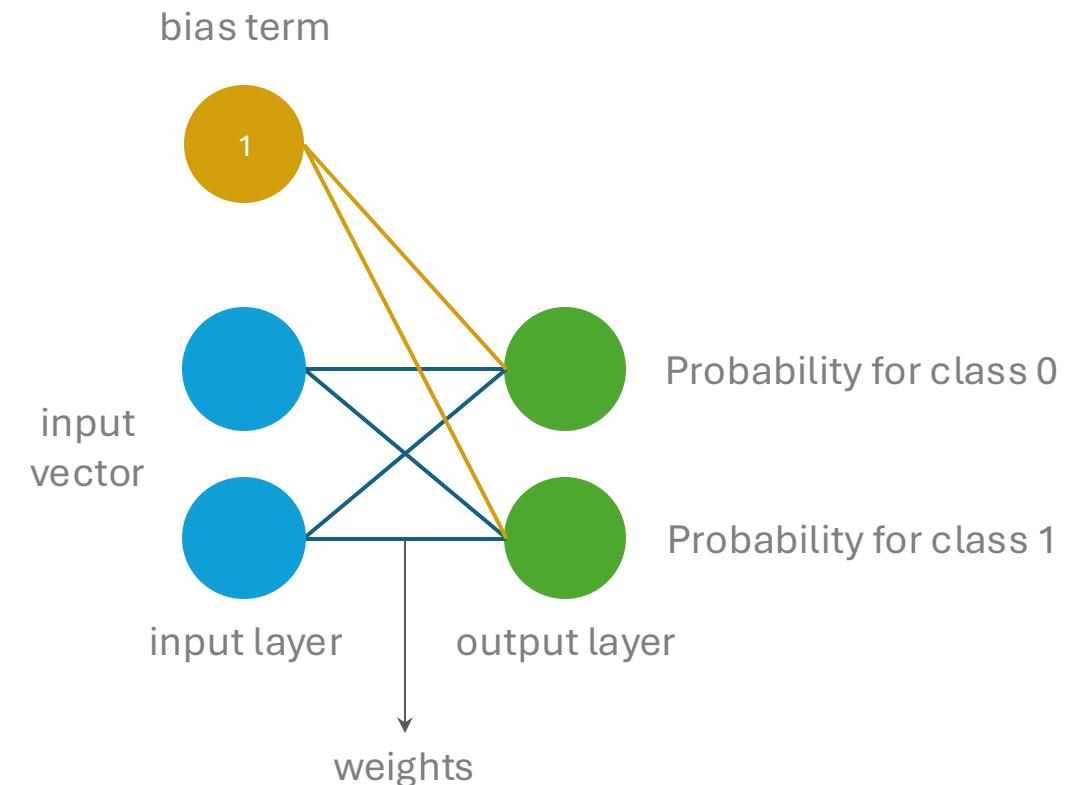


# Introduction to Neural Networks

1.1 Read tabular data for a binary classification task.

1.2 Build the model with `nn.Linear()`. Understand what a layer, linear connections, weights, biases, and logits are.

1.3 Make predictions from a pretrained model.



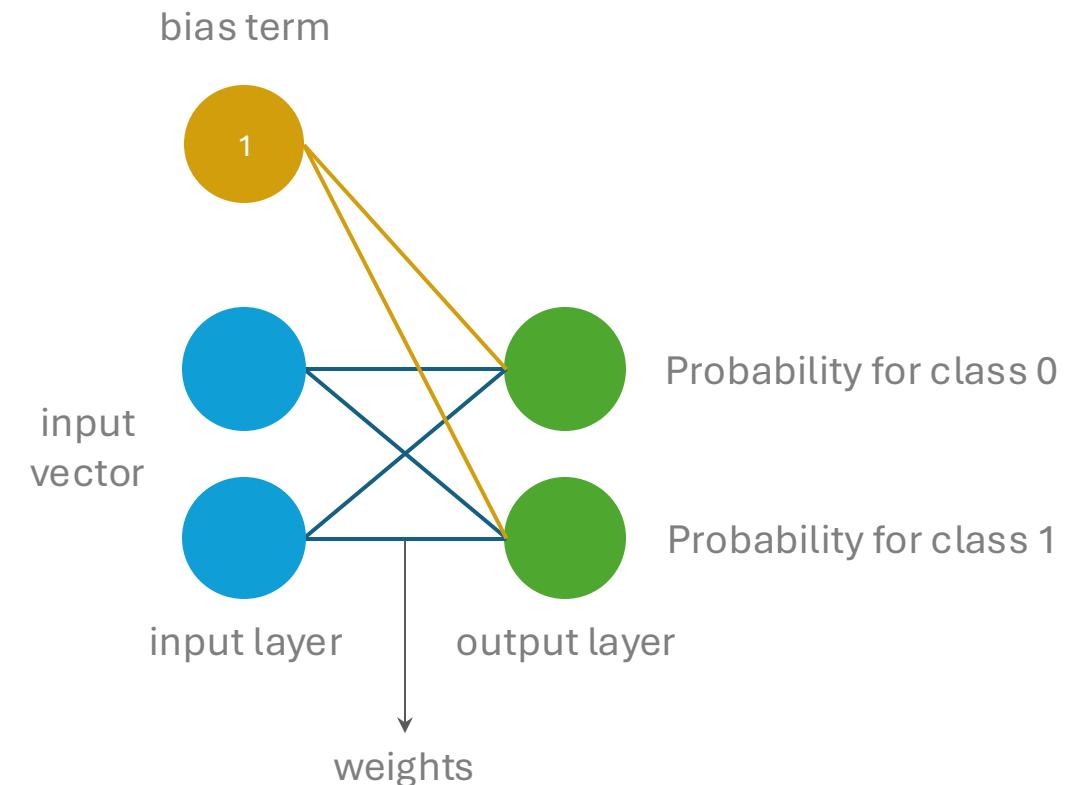
# Introduction to Neural Networks

1.1 Read tabular data for a binary classification task.

1.2 Build the model with `nn.Linear()`. Understand what a layer, linear connections, weights, biases, and logits are.

1.3 Make predictions from a pretrained model.

1.4 Build a model with `nn.Sequential()` and network class.



# Introduction to Neural Networks

1.1 Read tabular data for a binary classification task.

1.2 Build the model with `nn.Linear()`. Understand what a layer, linear connections, weights, biases, and logits are.

1.3 Make predictions from a pretrained model.

1.4 Build a model with `nn.Sequential()` and network class.

1.5 Familiarize yourself with the idea of non-linearity, build the first NN with a non-linear activation function.

1.6 Count the model's parameters.

(optional) 1.7 Implement a class of (a skip-connection) network of a specified architecture.

**TODO** Your task now is to create a network that takes  $D_i = 5$  inputs,  $D_o = 4$  outputs and has three hidden layers of sizes  $D_1 = 20$ ,  $D_2 = 10$ , and  $D_3 = 7$ . The activation between linear layers should be a ReLU. Implement this network in Pytorch.

What are the sizes of each weight matrix and bias vectors?

```
[*]: #create a simple neural network with nn.Sequential  
  
D_i = 5  
D_o = 4  
  
D_1 = 20 # dimentionality of the hidden layer 1  
D_2 = 10 # dimentionality of the hidden layer 2  
D_3 = 7 # dimentionality of the hidden layer 3  
#TODO create a network  
# model = ...  
raise NotImplementedError()
```

Please check the step-by-step guide  
for creating a new environment in Noto