Problem:
Implement a deep neural network for Question and Answer with multiple choice.

Dataset:
We use the Cosmos QA dataset for training the model. The dataset consists of **35.6K** problems that require commonsense-based reading comprehension, formulated as multiple-choice questions. The dataset is split into training (20209 questions), development (2985 questions), and test (5053 questions) sets.

Model Architecture:
The model used is based on the paper "DCMN+: Dual Co-Matching Network for Multi-choice Reading Comprehension" (arxiv- https://arxiv.org/pdf/1908.11511.pdf). It uses a pre-trained BERT model to get the contextual encoding from text and bidirectionally incorporates all the pairwise relationships among the (paragraph, question, options) triplet. Specifically, the passage-question, passage-option, and question-option pairwise relationship are modeled simultaneously and bidirectionally for each triplet, exploiting the gated mechanism to fuse the representations. Finally a classifier layer outputs a probability distribution over the four multiple choice options.

Hyperparameters:
We use the following values for the hyperparameters during training:

Adam Learning Rate	1e-5
Training batch size	8
Training epochs	7
Max token length	128

Performance:
The trained model is evaluated on the train, test, and dev sets. We report the model's accuracy in choosing the correct option for the multiple choice questions.

Dataset	**Accuracy**
train	0.841
test	0.591
dev	0.695

The output of the python notebook is saved as a hw3_906466769_Output.pdf