- Hyper-parameters tuned:
  - Logging steps: This indicates how often training progress is recorded and displayed, helping monitor the model's performance and troubleshoot issues. For periodic updates on training loss, I've selected logging steps as 500.

  - Save Steps: Determines how frequently the model's parameters are saved during training. It ensures that valuable progress is not lost in case of interruptions and enables resuming training from the last saved point. As we had limited resources for running our code, I tuned this parameter to 1000.

  - Learning Rate: Controls how quickly or slowly the model adjusts its parameters during training. A higher learning rate leads to faster convergence but may risk overshooting optimal values, while a lower rate may slow down training but can help in fine-tuning and stabilizing the learning process. Earlier I tuned IndicBERT with learning rate = 5e-05 but the loss was more, therefore for IndicNER, I increased it to 7e-5

  - per_device_train_batch_size: Specifies the number of training examples processed simultaneously on each device (e.g., GPU). It balances between utilizing hardware efficiently and ensuring that there's enough data for meaningful updates to the model's parameters. I tuned it to 16 (default value=8) for faster execution of code.

  - per_device_eval_batch_size: Similar to training batch size but for evaluation/validation data. It impacts how efficiently evaluation metrics are computed and can affect the model's performance estimation during training. I tuned it to 16 (default value=8) for faster execution of code.

- Question 2 Outputs:
  - IndicBERT:

Training Dataset: Class	Precision	Recall	F1-Score
B-LOC	0.81	0.86	0.84
B-ORG	0.82	0.73	0.77
B-PER	0.87	0.85	0.86
I-LOC	0.73	0.52	0.61
I-ORG	0.80	0.65	0.71
I-PER	0.89	0.87	0.88
O	0.95	0.97	0.96
macro f1:	0.00	0.00	0.92

    - Validation Dataset:

Class	Precision	Recall	F1-Score
B-LOC	0.75	0.78	0.76
B-ORG	0.72	0.68	0.70
B-PER	0.81	0.79	0.80
I-LOC	0.59	0.46	0.52
I-ORG	0.63	0.52	0.57
I-PER	0.84	0.83	0.83
O	0.93	0.95	0.94
macro f1:	0.00	0.00	0.89

    - Test Dataset:

Class	Precision	Recall	F1-Score
B-LOC	0.85	0.74	0.79
B-ORG	0.78	0.68	0.73
B-PER	0.86	0.80	0.83
I-LOC	0.62	0.50	0.55

I-ORG	0.62	0.52	0.57
I-PER	0.89	0.86	0.87
O	0.93	0.97	0.95
macro f1:	0.00	0.00	0.90

- IndicNER:
  - Training Dataset:

Class	Precision	Recall	F1-Score
B-LOC	0.93	0.96	0.94
B-ORG	0.94	0.92	0.93
B-PER	0.96	0.96	0.96
I-LOC	0.88	0.84	0.86
I-ORG	0.92	0.94	0.93
I-PER	0.94	0.96	0.95
O	0.99	0.99	0.99
macro f1:	0.00	0.00	0.97

  - Validation Dataset:

Class	Precision	Recall	F1-Score
B-LOC	0.81	0.86	0.84
B-ORG	0.76	0.76	0.76
B-PER	0.86	0.88	0.87
I-LOC	0.69	0.65	0.67
I-ORG	0.71	0.71	0.71
I-PER	0.88	0.88	0.88
O	0.96	0.95	0.96
macro f1:	0.00	0.00	0.92

  - Test Dataset:

Class	Precision	Recall	F1-Score
B-LOC	0.88	0.81	0.85
B-ORG	0.75	0.73	0.74
B-PER	0.90	0.88	0.89
I-LOC	0.67	0.68	0.68
I-ORG	0.65	0.60	0.63
I-PER	0.94	0.93	0.93
O	0.95	0.96	0.96
macro f1:	0.00	0.00	0.92