Model Development Phase

Date	28 July 2025
Project Title	Flight Delays Prediction Using Machine Learning
Maximum Marks	5 Marks

Feature Selection Report:

In the forthcoming update, each feature will be accompanied by a brief description. Users will indicate whether it's selected or not, providing reasoning for their decision. This process will streamline decision-making and enhance transparency in feature selection.

Feature	Description	Selected (Yes/No)	Reasoning
Month	Month of the flight (1–12)	Yes	Seasonal trends affect delays (e.g., winter weather).
DayofMonth	Day of the month	Yes	Helps capture date-specific delay patterns.
DayofWeek	Day of the week (1=Monday to 7=Sunday)	Yes	Flight delays vary by weekday due to traffic and demand.
Carrier (Airline)	Airline operating the flight	Yes	Carrier performance affects delay likelihood.

Origin	Origin Airport	Yes	Airport congestion and location impact delays.
Destination	Destination Airport	Yes	Arrival airport congestion/weather impacts delays.
DepTime	Scheduled departure time (HHMM)	Yes	Critical for modeling delays based on time of day.
ArrTime	Scheduled arrival time (HHMM)	Yes	Useful for calculating planned flight duration
ActualDepTime	Actual departure time (HHMM)	Yes	Difference from DepTime is core for delay calculation
DepDelay	Departure Delay in Minutes	Yes	Strong predictor of arrival delay.
Distance	Distance between origin and destination (miles)	Yes	Longer flights may have fewer short delays.
FlightNum	Flight number	No	Identifier only, no predictive value.
TailNum	Tail Number	No	Unique ID irrelevant to delays.
TaxiIn / TaxiOut	Time spent taxiing in or out	No	Not known before departure, thus not useful for prediction.
CRSDepTime	Original Scheduled Departure Time	No	Redundant with DepTime.
ArrDelay	Arrival Delay in Minutes	No	Target leakage (not available before prediction).

Unnamed Columns	Index / Empty Columns	No	No usable data content