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Project T Final

### Multiplicative Weights and Ensemble Methods - Boosting Quiz

**Question 1: Which of the following is NOT a similarity between Orthogonal Matching Pursuit and Adaboost?**

**Question 2: When applying bagging, would we expect to receive better results when the models have higher or lower correlation with each other? Explain.**

**Question 3: Which of the following is the correct general use case of bagging and boosting?**

**Question 4: In multiplicative weights, what is an advantage of using probabilistic decision making rather than a deterministic strategy?**

**Question 5: Suppose we had  $n$  experts and losses on each day in  $[0, 1]$ . What is the tightest bound the multiplicative weights algorithm can guarantee about your total loss over  $T$  days?**

**Question 6: In multiplicative weights, how can an adversary take advantage of someone using the halving algorithm from the notebook?**

**Question 7: How do decision boundaries of boosting with linear weak classifiers differ from boundaries of decision trees?**

**Question 8: What is the advantage of using random forests over simple decision trees?**

**Question 9: The classifiers that are part of the Adaboost must be weak learners which have accuracy of over 50%. Why are decision stumps good weak learners for Adaboost?**

**Question 10: Gradient boosting generalizes the idea of boosting to arbitrary differentiable loss functions. Which of these applications can gradient boosting to be used in?**