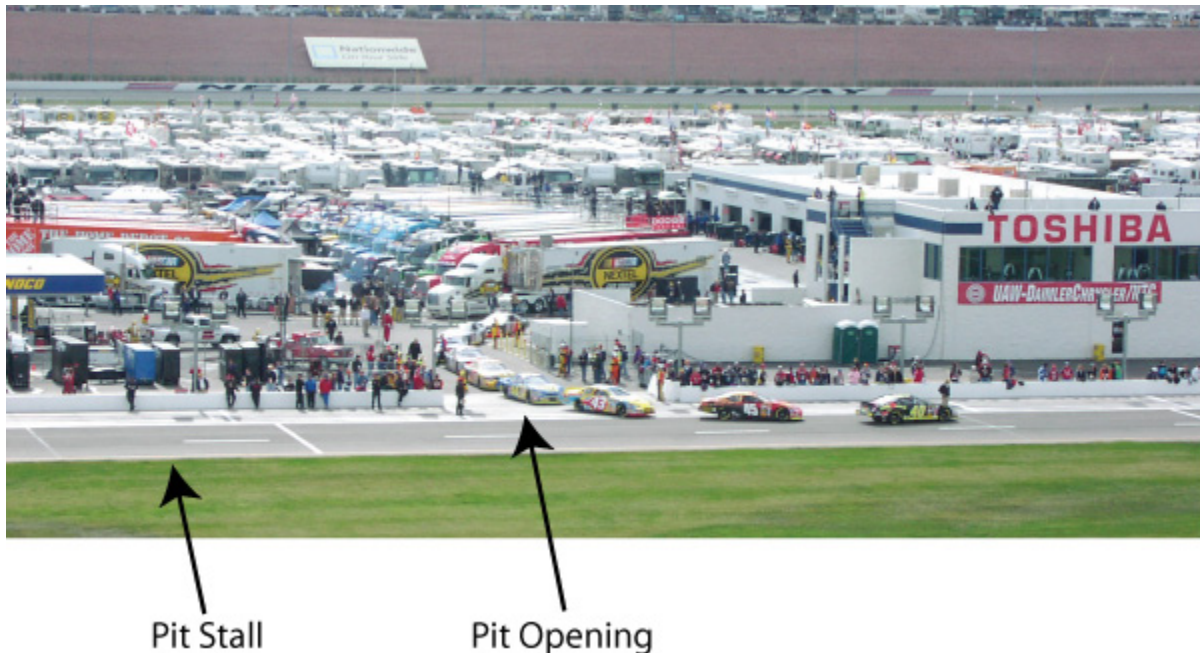


Where to Pit?

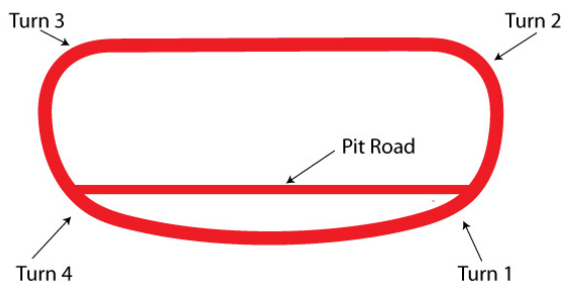
Crew chiefs choose pit boxes (the location on pit road where the car is serviced during pit stops) in the order in which their drivers qualified for the race. The faster your driver was able to complete a lap, the earlier in the process you get to pick your pit box.

Based on data from some races earlier this year, can you predict where the crew chiefs will pick their pit boxes for the next race? From that data, can you formulate some rules that a new crew chief could use to get the best pit box?



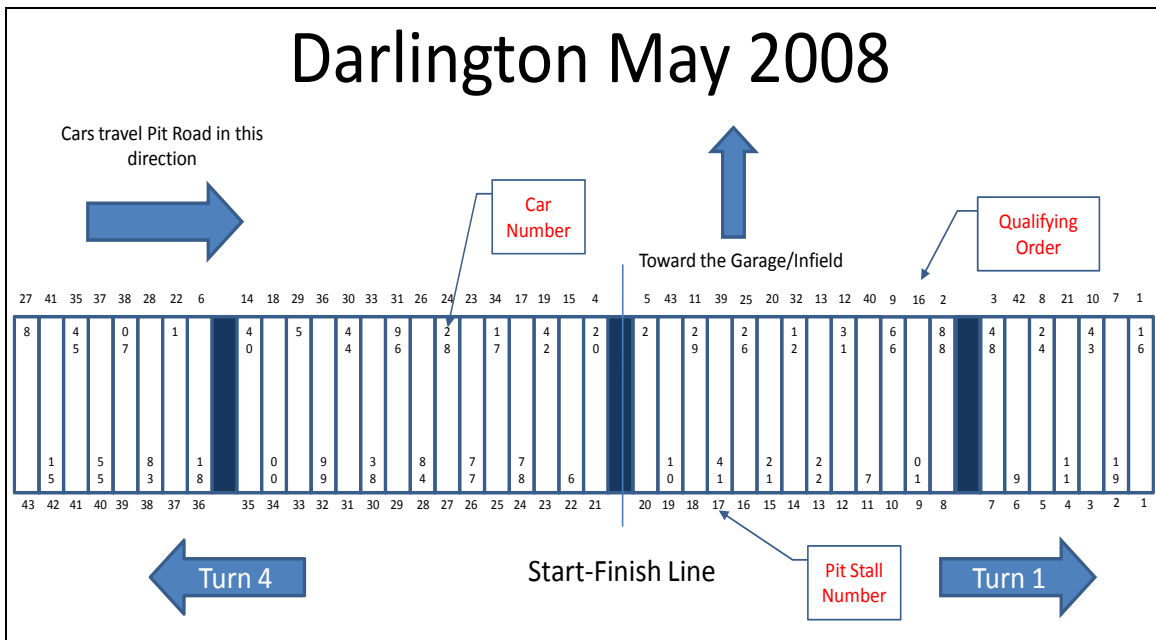
Background

Pit Road is a long road that runs parallel to the track. Cars enter Pit Road coming from the direction of turns 3 and 4, and leave Pit Road in the direction of turns 1 and 2. Pit Road has a series of boxes outlined with paint, each of which is called a **pit stall**.



The car's crew services the car during pit stops in the car's assigned pit stall. During qualifying, each car runs a maximum of two laps, with the cars starting the race in order of the fastest qualifying. After qualifying is completed, the crew chiefs pick pit stalls in the order in which they qualified. The fastest time gets the first choice of pit stalls.

The diagram below shows a *pit map*. The pit map below (for the May 208 race at [Darlington Raceway](#)) shows how the teams chose their pit stalls. The numbers within each box tell you the number of the car that occupies that pit stall. The numbers along the bottom of the box are the pit stall numbers, which are always numbered with box number “1” being the box closest to turn 1, the pit road exit. The numbers along the top are the order in which the car starts the race (which is the order in which pit stalls are selected). For this race, Greg Biffle’s No. 16 car started the race in the first position, and that team chose pit stall #1. The No. 19 car of Elliott Sadler started the race in 7th position and chose the 2nd pit stall.



The pit map for the May 2008 race at Darlington Raceway.

The dark boxes represent breaks in the pit wall. These are lanes where drivers can come in or out of the garage. The pit map also shows the location of the start finish line. When a driver comes down Pit Road, he or she is given credit for completing a lap when the car passes the start-finish line.

You’ll notice from studying the pit map that teams don’t just pick pit stalls in the order in which they qualified. The #2 pit stall might not be the second best pit stall. There is some strategy crew chiefs use in picking pit stalls. Your challenge is to figure out the elements of that strategy.

Start Your Engines...

SE.1. Your team owner gives you information showing the order in which different cars qualified and the pit stalls they picked for previous races. He asks you to develop a series of rules that your crew chief can use when it comes time for your team to pick their pit stall for the next race.

Your rules could refer to specific stalls. For example, the first choice is almost always pit stall #1 because pit stall #1 is closest to the exit of pit road. NASCAR lines up the cars in the order in which they cross the pit road exit line after pit stops, so it is advantageous to be close to the pit road exit line. You also should find more general rules . Write the list of rules below and state the evidence that led you to develop that rule.



Pit Stop: Do not continue until after the class discussion.

SE.2. Your owner brings you an empty pit map for this weekend's race. Try to predict the pit stalls the top 10 starting cars will choose using the table below. Write your first choice, second choice and third choice for each of the top ten.

Qualifier Number/Car	Most likely selection	Second most likely selection	Third most likely selection
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

SE.3. Compare your selections with those of other groups. Are there some rules that all the groups came up with? Are there rules that contradict each other within groups?

Extension A: Races at a Single Track

EA.1. Examine the data for a number of races at the same track. Is it possible for you to come up with more specific rules when dealing only with races at a single track?