

# 8 Cars | 8 Spots | $\pi_1 = 5$

\* Problem from class

$$\left(\frac{7!}{4!3!}\right)5^34^2 + \left(\frac{7!}{5!2!}\right)6^43^1 + \left(\frac{7!}{6!1!}\right)7^52^0 + \left(\frac{7!}{7!0!}\right)8^6 = 269297 + 8^6 \quad (\text{Decimal: } 531441)$$

```
C:\Users\sethb\AppData\Local\Programs\Python\Python38-32\python.exe  
# of possible variants: 16777216  
# of possible variants with pi_1=5: 2097152  
# of valid PFs with p1=5: 531441  
  
Process finished with exit code 0
```

# The Birthday Shuffle

n=9

$\pi_1 = 5 \mid \pi_2 = 1 \mid \pi_3 = 5 \mid \pi_4 = 9 \mid \pi_5 =$

1

```
C:\Users\sethb\AppData\Local\Programs\Python\Python310\python.exe C:/Use
Time to generate all n=9 variants: 42.4264 seconds
# of possible variants: 387420489

Time to find all pfs_5: 63.1041 seconds
# of possible variations that start with 5 : 43046721
Time to find all variations that start with 51: 6.4042 seconds
# of possible PFs that start with 51 : 4782969
Time to find all variations that start with 515: 0.7044 seconds
# of possible PFs that start with 515 : 531441
Time to find all variations that start with 5159: 0.0761 seconds
# of possible PFs that start with 5159 : 59049
Time to find all variations that start with 51591: 0.0088 seconds
# of possible PFs that start with 5159 : 6561
Time to find all ParkingFunctions: 0.0738 seconds
# of valid PFs with n=9 and start with 551591: 2613

Process finished with exit code 0
```

Total time: ~2 mins