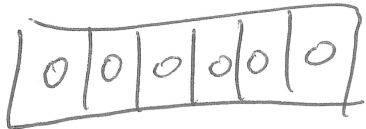


COP 3502 9/15/21

- ① Add several TA led study groups start next Monday. (Sarah, Matt)
- ② Don't email me at 12:00 anything 3m period.
- ③ It's OKAY if you don't get the homework to work! Try your best! (Start early ask all of your questions several days before it's due.)
- ④ Middle processing PO cheating cases. Will finish tomorrow!
- ⑤ BRUTE FORCE!

ODOMETER



0 0 0 0 0 1

⋮

0 0 0 0 0 9

0 0 0 0 1 0

⋮

0 0 0 0 9 9

0 0 0 1 0 0

⋮

9 9 9 9 9 9

digits (10)

places (6)

of fixed digits

ODOMETER(123, 5, 4, 2)

plus digits
↑
fixed digits

23000
23001
⋮
23333

23000
⋮
23033

OD(1230, 5, 4, 3)

23100
⋮
23133

OD(1231, 5, 4, 3)

23200
⋮
23233

OD(1232, 5, 4, 3)

23300
⋮
23333

OD(1233, 5, 4, 3)

```
for(int d=0; d<NumDigits; d++) {
```

```
    array[k] = d;
```

```
    odometer(array, length, NumDigits, k+1);
```

```
}
```

COMBOS

m+ms snickers

skittles

000 { }

100 { m+ms }

010 { snickers }

001 { skittles }

{ m+ms, snickers }

{ m+ms, skittles }

{ snickers, skittles }

{ m+ms, snickers, skittles }

110

101

011

111

PERMUTATIONS

~~1, 2, 3~~

0, 1, 2

0, 2, 1

1, 0, 2

1, 2, 0

2, 0, 1

2, 1, 0

NO REPEAT DIGITS
EACH ONE USED
EXACTLY ONCE!

length # fixed used
PERM(

0	1	2
---	---	---

, 3, 1,

1	0	0
---	---	---

)

0, 1, 2

0, 2, 1

PERM(

3	1	1	1	1	1	1	1
---	---	---	---	---	---	---	---

, 7, 2,

0	1	0	1	0	0	0	0
---	---	---	---	---	---	---	---

)

3	1
---	---

 2, 4, 5, 6, 7

3	1
---	---

 7, 6, 5, 4, 2

120
print

if (k == length) {

print
return;

}

for (i = 0; i < length; i++) {

if (used[i]) continue;

array[k] = i; used[i] = 1;

perm(array, length, k+1, used);

used[i] = 0; // REALLY IMPORTANT

}