

## js workshop advanced

Skibidi Toilet Jr has just been invited to a Halloween party located in Ohio!

- (a) They have been given a level 1 starter costume by Skibidi Toilet Sr. Their current costume has a lowkey depressing aura and they recently spotted a level 100 rizzler with a costume that aura gaps them. To “plus 100 aura” their costume, they need to ask their parents. With each request, they can choose to remove a part from their current costume, or add a part, or trade a part with another. However, each request costs them one Good Skibidi Point (GSP) and GSP are very hard to obtain. Therefore, they want to ask the least number of times possible. What is the smallest number of GSP they have to spend?

Each costume consists of a list of integers. Each integer represents a specific costume part. They can buy, sell, or trade costume parts. Any part can be traded with any other part.

### Goofy ahh example

```
Start = [1, 2, 3, 4];
End = [2, 3, 5, 6];

console.assert(partA(Start, End) === 3);
```

The starter costume has parts 1, 2, 3 and 4. The level 100 costume has parts 2, 3, 5, 6. To “plus 100 aura” the starter costume, they want to remove part 1, keep parts 2 and 3, trade part 4 in favour of part 5, and add part 6 which turns the start costume into the level 100 one. The minimum number of times they have to ask is 3 times as keeping costume parts means they don’t have to ask.

- (b) Skibidi has been especially goofy ahh lately and as a result has 0 GSP which means they must change the costume by themselves. They can buy new parts and sell unused parts. However, with their W rizz, Skibidi can potentially achieve a lower fanum tax by trading a part for another. The fanum tax for trading items depends solely on the item that is being given away. Chat, can we help Skibidi find lowest fanum tax needed to “plus 100 aura” the starter costume?

The buying, selling and replacing fanum tax are all stored in an object.

### Chat we can do it

```
const Start = [1, 1, 4];
const End = [1, 3, 5];

const Costs = {
  1: { sell: 1, buy: 2, trade: 2 },
  2: { sell: 2, buy: 2, trade: 3 },
  3: { sell: 1, buy: 5, trade: 3 },
  4: { sell: 2, buy: 1, trade: 9 },
  5: { sell: 1, buy: 6, trade: 4 }
};

console.assert(partB(Start, End, Costs) === 10);
```

They want to keep part 1, trade the second part 1 with part 3 which costs 2 fanum tax (`Costs[1].trade`), and then sell part 4 and buy part 5. They don’t trade part 4 because that costs 9 fanum tax whereas buying and selling separately only costs 8; sometimes the extra yapping is worth it. Therefore, the minimum fanum tax is 10.

- (c) Skibidi comes back from their economics class and realises that the economy in Ohio is cooked. Due to the collapse of confidence in the economy, Skibidi can only buy, sell, or trade each item a maximum number of times. Each operation (buy, sell, trade) has its own individual cap. Find the

new lowest fanum tax. Assume that there is no deflationary spiral happening frfr and that there is always a way to “plus 100 aura” the starter costume.

Chat is this fr on god no cap on jah mums??

```
const Start = [1, 1, 4];
const End = [1, 3, 5];

const Costs = {
  1: { sell: 1, buy: 2, trade: 2 },
  2: { sell: 2, buy: 2, trade: 3 },
  3: { sell: 1, buy: 5, trade: 3 },
  4: { sell: 2, buy: 1, trade: 9 },
  5: { sell: 1, buy: 6, trade: 4 }
};

const Limits = {
  1: { sell: 1, buy: 1, trade: 1 },
  2: { sell: 2, buy: 2, trade: 1 },
  3: { sell: 1, buy: 1, trade: 2 },
  4: { sell: 0, buy: 1, trade: 1 },
  5: { sell: 1, buy: 1, trade: 1 }
};

console.assert(partB(Start, End, Costs, Limits) === 11);
```

They want to keep part 1, trade the second part 1 with part 3 which costs 2 fanum tax (`Costs[1].trade`), and then trade part 4 for part 5.

In (b), they would have sold part 4 and then bought part 5 but this time they cannot sell our part 4 individually as `Limits[4].sell` is 0. Therefore, they are forced to trade which means they incur `Costs[4].trade` which is 9.

Thus, the minimum fanum tax expenditure is now 11.