Blackbook

1299,-

Buy

Adapter

Adapter

Adapter

Blackbook

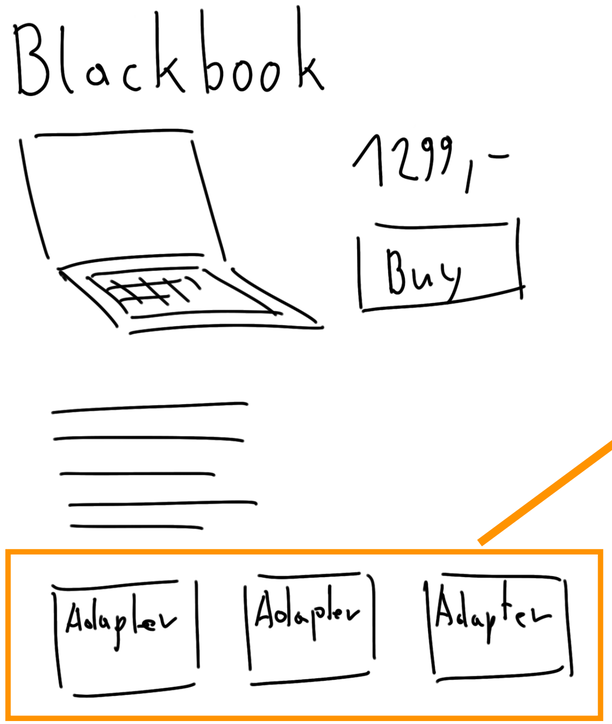
1299,-

Buy

Adapter

Adapter

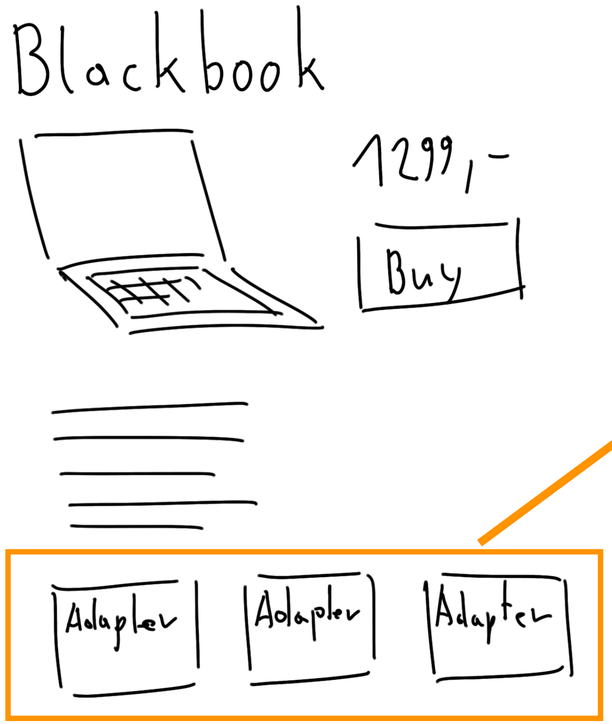
Adapter



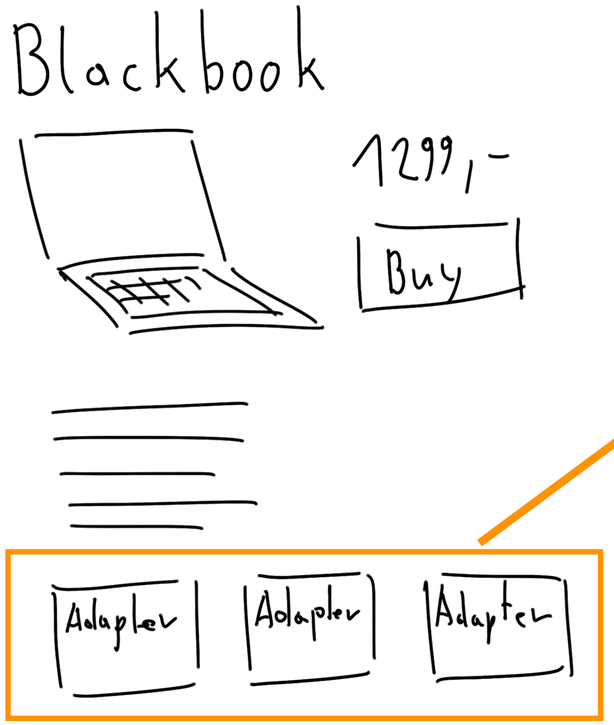

```
{
  product(id: $id) {
    title



  }
}
```




```
{
  product(id: $id) {
    title
    recommendedProducts {
      title
      image {
        url
      }
    }
  }
}
```




```
{
  product(id: $id) {
    title
    recommendedProducts {
      title
      image {
        url
      }
    }
  }
}
```

```
{
  product: {
    title: "Blackbook";
    recommendedProducts: [
      {
        title: "USB to HDMI Ada
        image: {
          url: "https://www.note
        }
      },
      {
        title: "USB to SD Card A
        image: {
          url: "https://www.note
        }
      },
    ]
  }
}
```

What if the list grows?

What if the list grows?

Pagination ftw 🙌

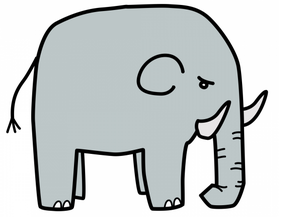
```
{
  product(id: $id) {
    title
    recommendedProducts {
      title
      image {
        url
      }
    }
  }
}
```

```
{
  product(id: $id) {
    title
    recommendedProducts(limit: 5, page: 2) {
      title
      image {
        url
      }
    }
  }
}
```

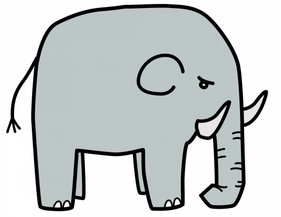
Questions over questions

- Is there a next page?
- Is there a previous page?
- Where do I attach relationship meta data?
- Will I see the same results when I refresh?

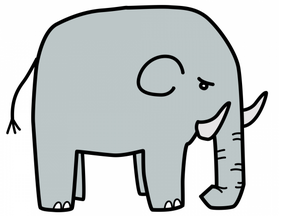
Relay Cursor Connections Specification



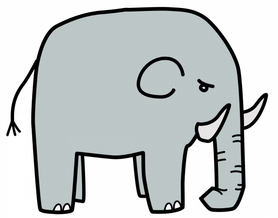
Cursor Connections Specification



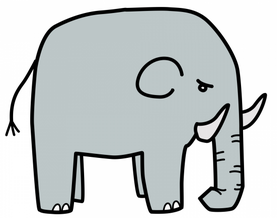
Connections Specification



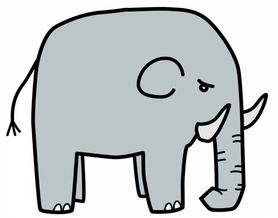
```
{
  product(id: $id) {
    recommendedProducts(first: 5, after: "4e025") {
      edges {
        node {
          title
          image {
            url
          }
        }
      }
      pageInfo {
        hasNextPage
        hasPreviousPage
        startCursor
        endCursor
      }
    }
  }
}
```



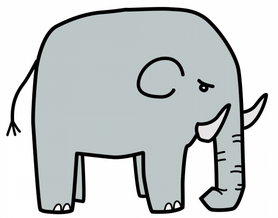
```
{
  product(id: $id) {
    recommendedProducts(first: 5, after: "4e025") {
      edges {
        node {
          title
          image {
            url
          }
        }
      }
      pageInfo {
        hasNextPage
        hasPreviousPage
        startCursor
        endCursor
      }
    }
  }
}
```



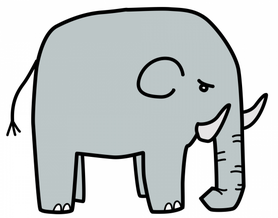
```
{
  product(id: $id) {
    recommendedProducts(first: 5, after: "4e025") {
      edges {
        node {
          title
          image {
            url
          }
        }
      }
      pageInfo {
        hasNextPage
        hasPreviousPage
        startCursor
        endCursor
      }
    }
  }
}
```

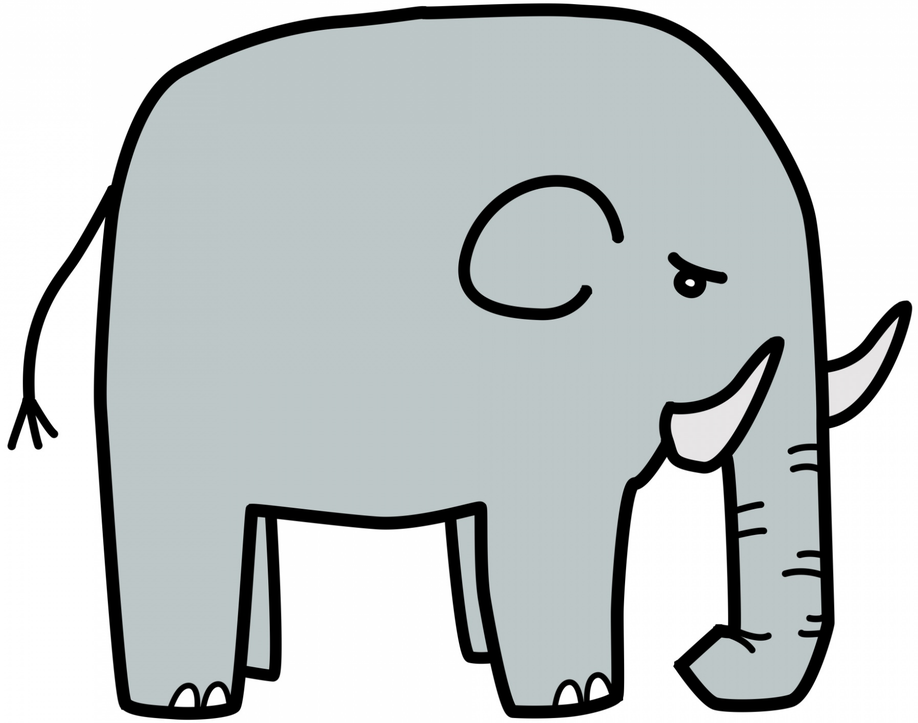


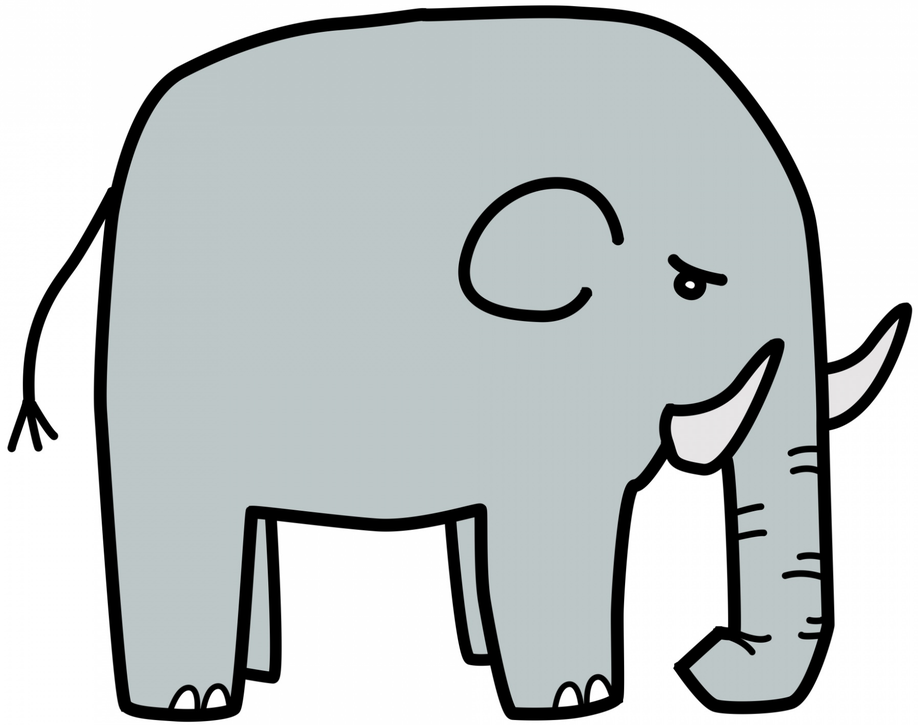
```
{
  product(id: $id) {
    recommendedProducts(first: 5, after: "4e025") {
      edges {
        node {
          title
          image {
            url
          }
        }
      }
      pageInfo {
        hasNextPage
        hasPreviousPage
        startCursor
        endCursor
      }
    }
  }
}
```



```
{
  product(id: $id) {
    recommendedProducts(first: 5, after: "4e025") {
      edges {
        node {
          title
          image {
            url
          }
        }
      }
      pageInfo {
        hasNextPage
        hasPreviousPage
        startCursor
        endCursor
      }
    }
  }
}
```







This is ugly! 😭

```
{
  product(id: $id) {
    title
    recommendedProducts(limit: 5, page: 2) {
      title
      image {
        url
      }
    }
  }
}
```

```
{
  product(id: $id) {
    title
    recommendedProducts(limit: 5, page: 2) {
      title
      image {
        url
      }
    }
    recommendedProductsPageInfo {
      hasNextPage
      hasPreviousPage
    }
  }
}
```

TODO recommendedProductsPageInfo would need (limit: 5, page:

2) so we want to nest it right aways

fix in all following slides

```
{
  product(id: $id) {
    title
    recommendedProducts(limit: 5, page: 2) {
      title
      image {
        url
      }
    }
    recommendedProductsPageInfo {
      hasNextPage
      hasPreviousPage
    }
  }
}
```

Blackbook

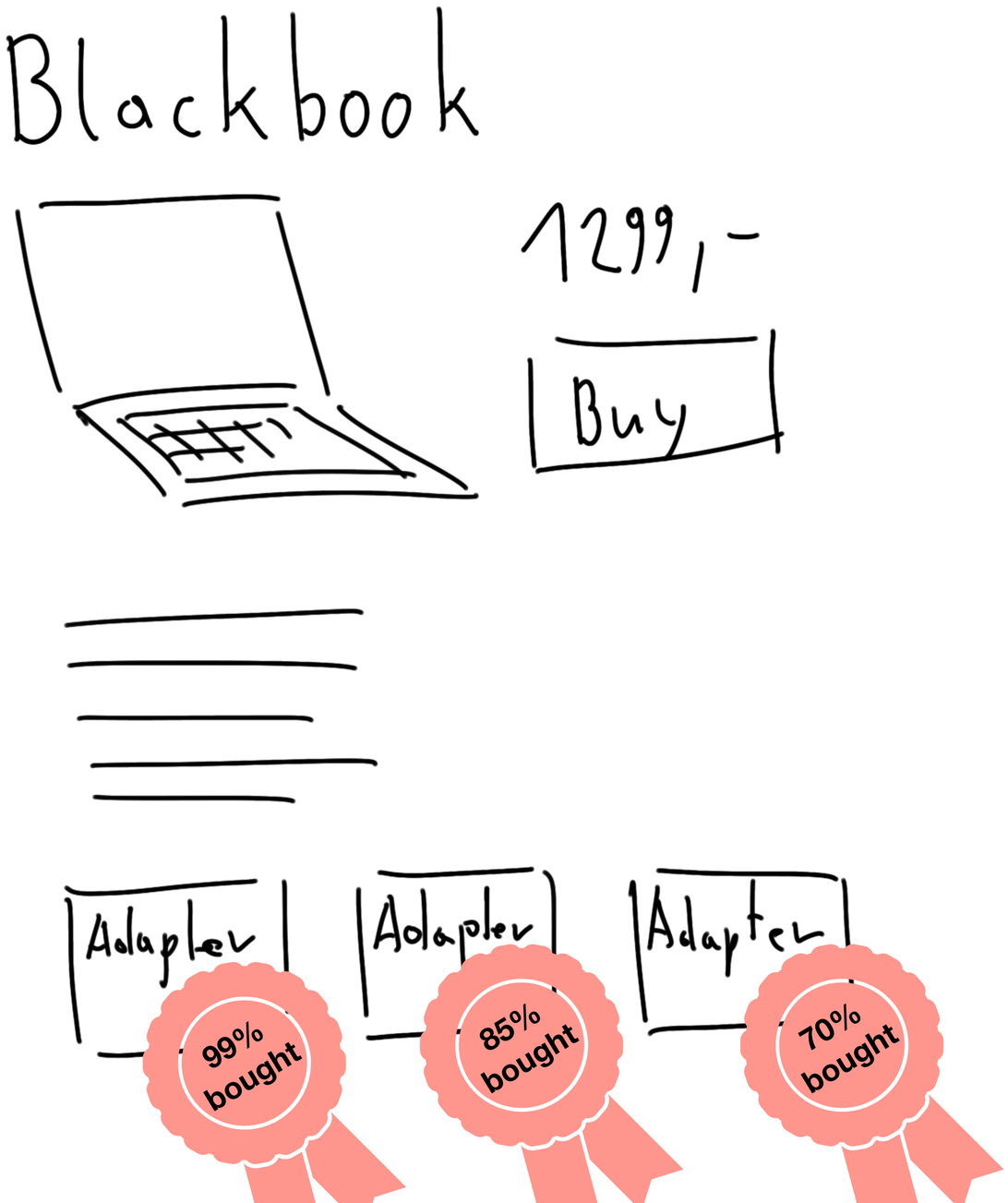
1299,-

Buy

Adapter

Adapter

Adapter


Blackbook
1299,-
Buy
Adapter
Adapter
Adapter
99% bought
85% bought
70% bought

```
{
  product(id: $id) {
    title
    recommendedProducts(limit: 5, page: 2) {
      title
      image {
        url
      }
    }
    recommendedProductsPageInfo {
      hasNextPage
      hasPreviousPage
    }
  }
}
```

```
{
  product(id: $id) {
    title
    recommendedProducts(limit: 5, page: 2) {
      title
      image {
        url
      }
      boughtTogetherPercentage
    }
    recommendedProductsPageInfo {
      hasNextPage
      hasPreviousPage
    }
  }
}
```

```
type Product {
  title: String!
  image: Image!
}
```

```
type Product {
  title: String!
  image: Image!
  boughtTogetherPercentage: Float
}
```

```
type Product {
  title: String!
  image: Image!
  boughtTogetherPercentage: Float
}
```

```
{
  product(id: $id) {
    title
    boughtTogetherPercentage # WHAT?
  }
}
```

```
type Product {
  title: String!
  image: Image!
}

type RelatedProduct {
  title: String!
  image: Image!
  boughtTogetherPercentage: Float!
}
```

```
type Product {
  title: String!
  image: Image!
}

type RelatedProduct {
  boughtTogetherPercentage: Float!
  product: Product!
}
```

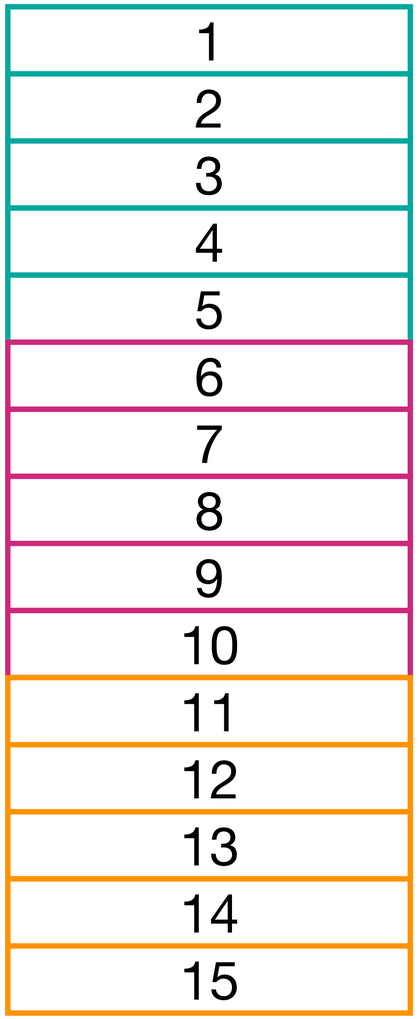
```
{
  product(id: $id) {
    title
    recommendedProducts(limit: 5, page: 2) {
      title
      image {
        url
      }
      boughtTogetherPercentage
    }
    recommendedProductsPageInfo {
      hasNextPage
      hasPreviousPage
    }
  }
}
```

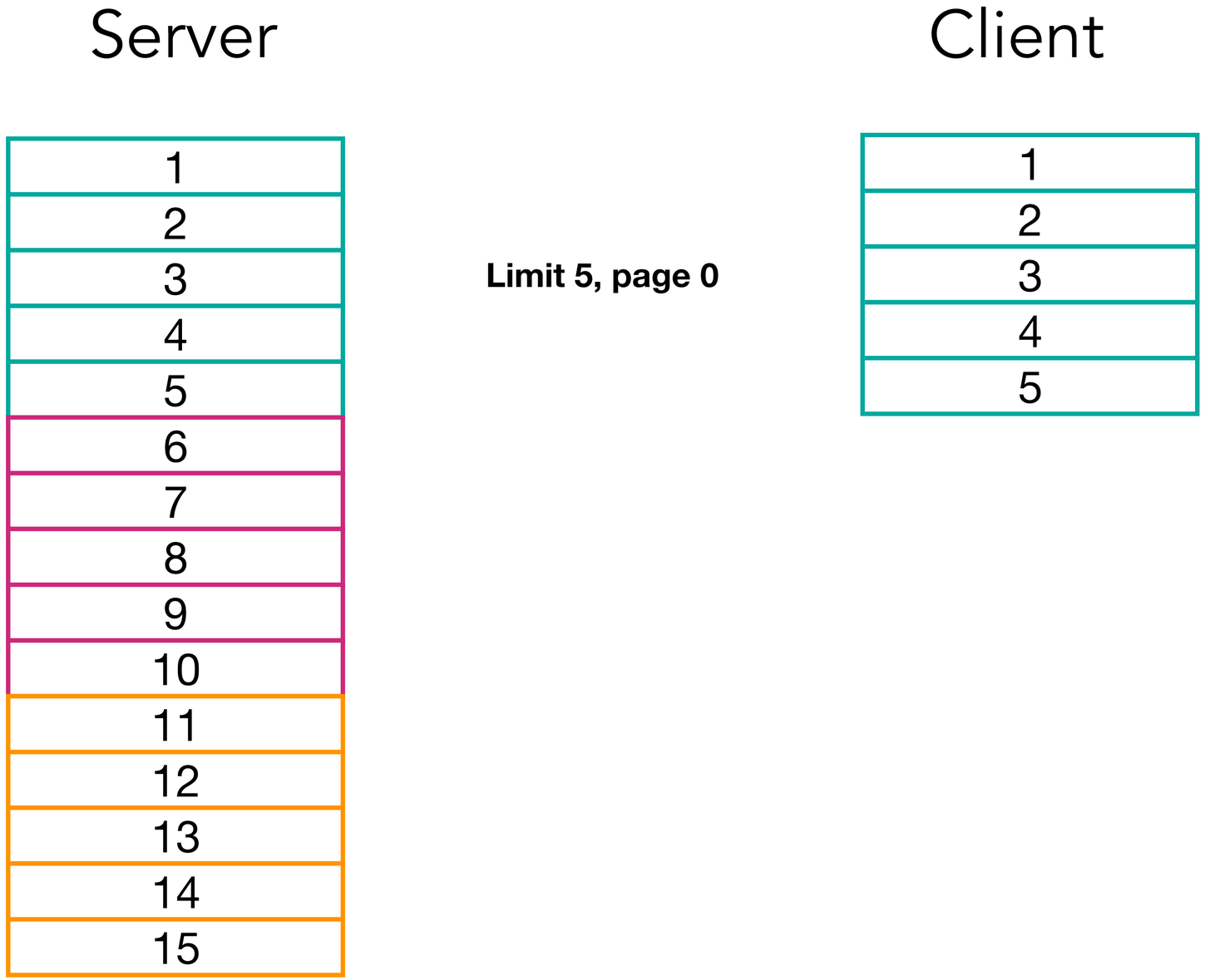
```
{
  product(id: $id) {
    title
    recommendedProducts(limit: 5, page: 2) {
      product {
        title
        image {
          url
        }
      }
      boughtTogetherPercentage
    }
    recommendedProductsPageInfo {
      hasNextPage
      hasPreviousPage
    }
  }
}
```

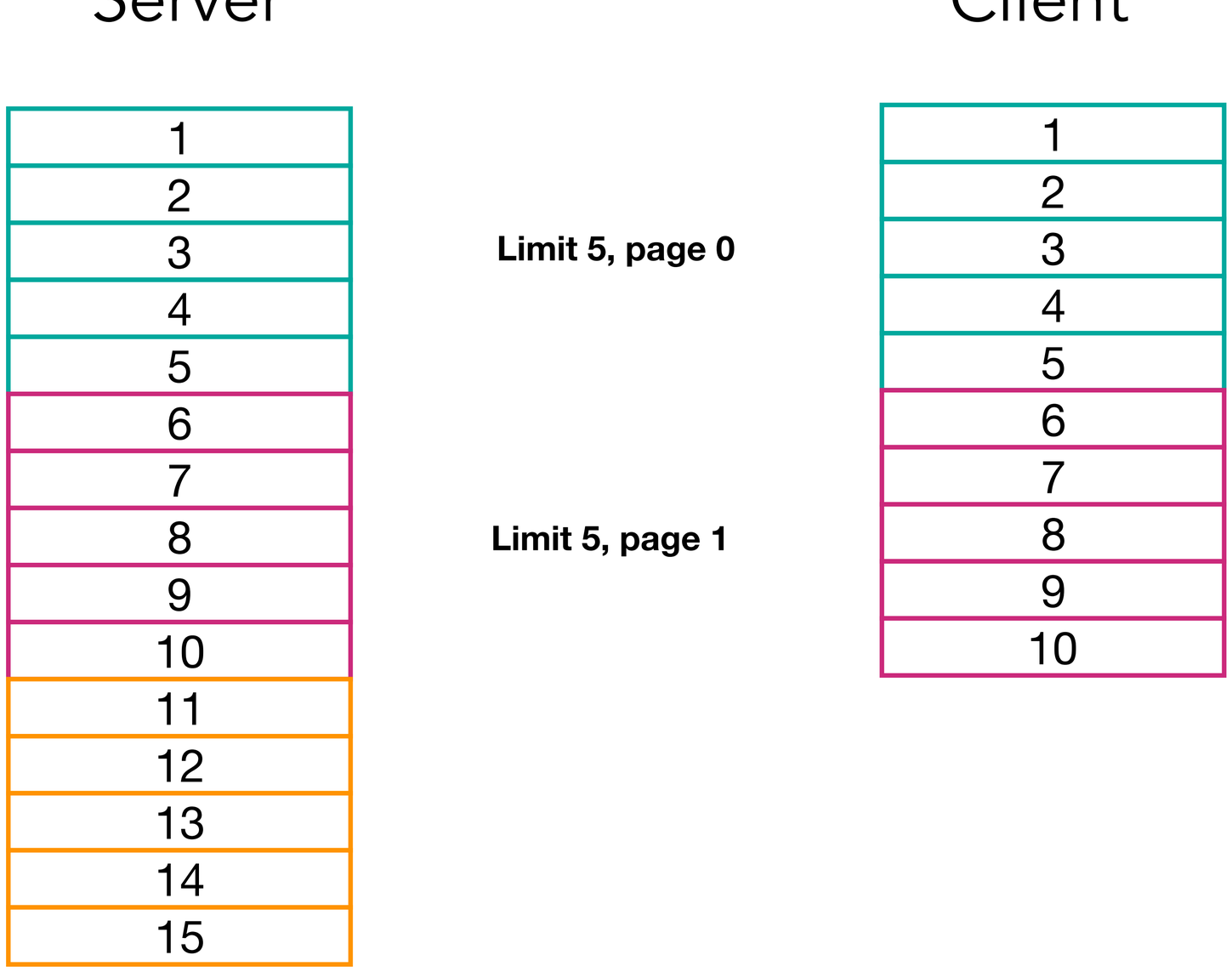
```
{
  product(id: $id) {
    title
    recommendedProducts(limit: 5, page: 2) {
      product {
        title
        image {
          url
        }
      }
      boughtTogetherPercentage
    }
    recommendedProductsPageInfo {
      hasNextPage
      hasPreviousPage
    }
  }
}
```

Server

Client

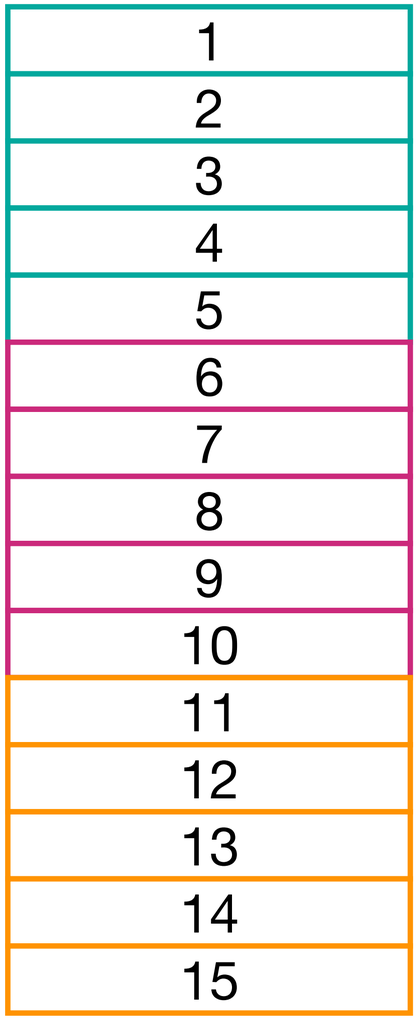


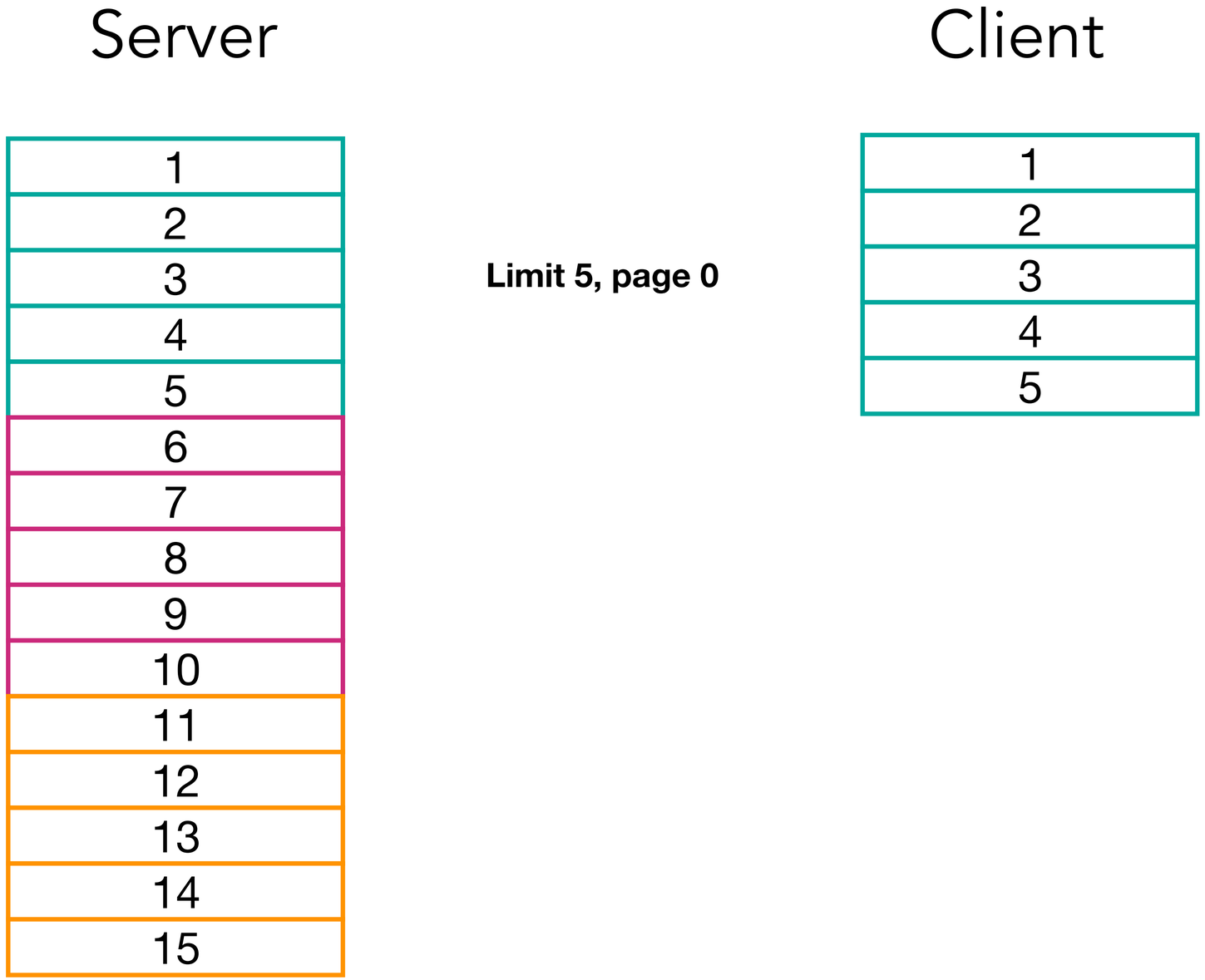

Server
Client
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
Limit 5, page 0
1
2
3
4
5

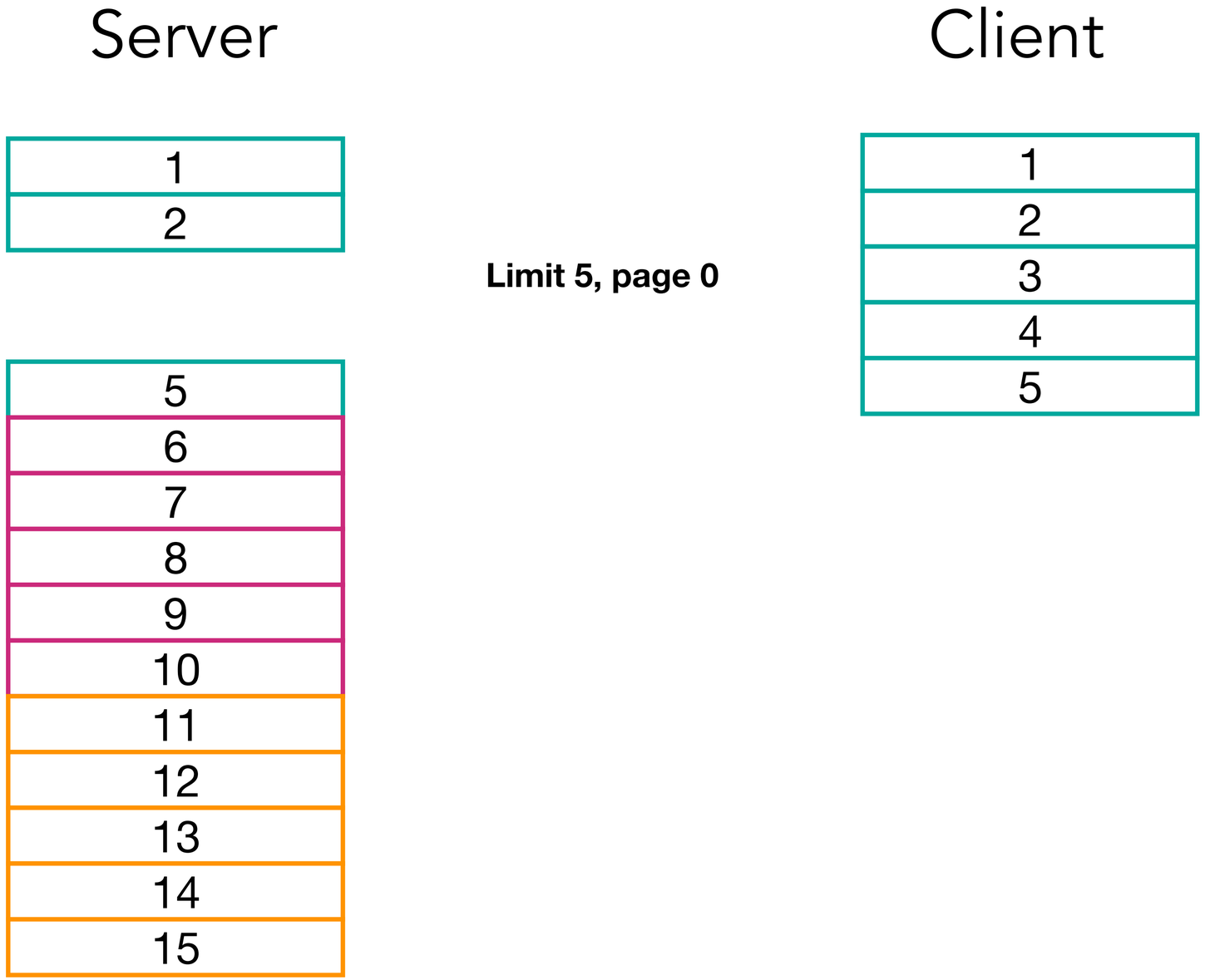

Server
Client
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
Limit 5, page 0
Limit 5, page 1
1
2
3
4
5
6
7
8
9
10

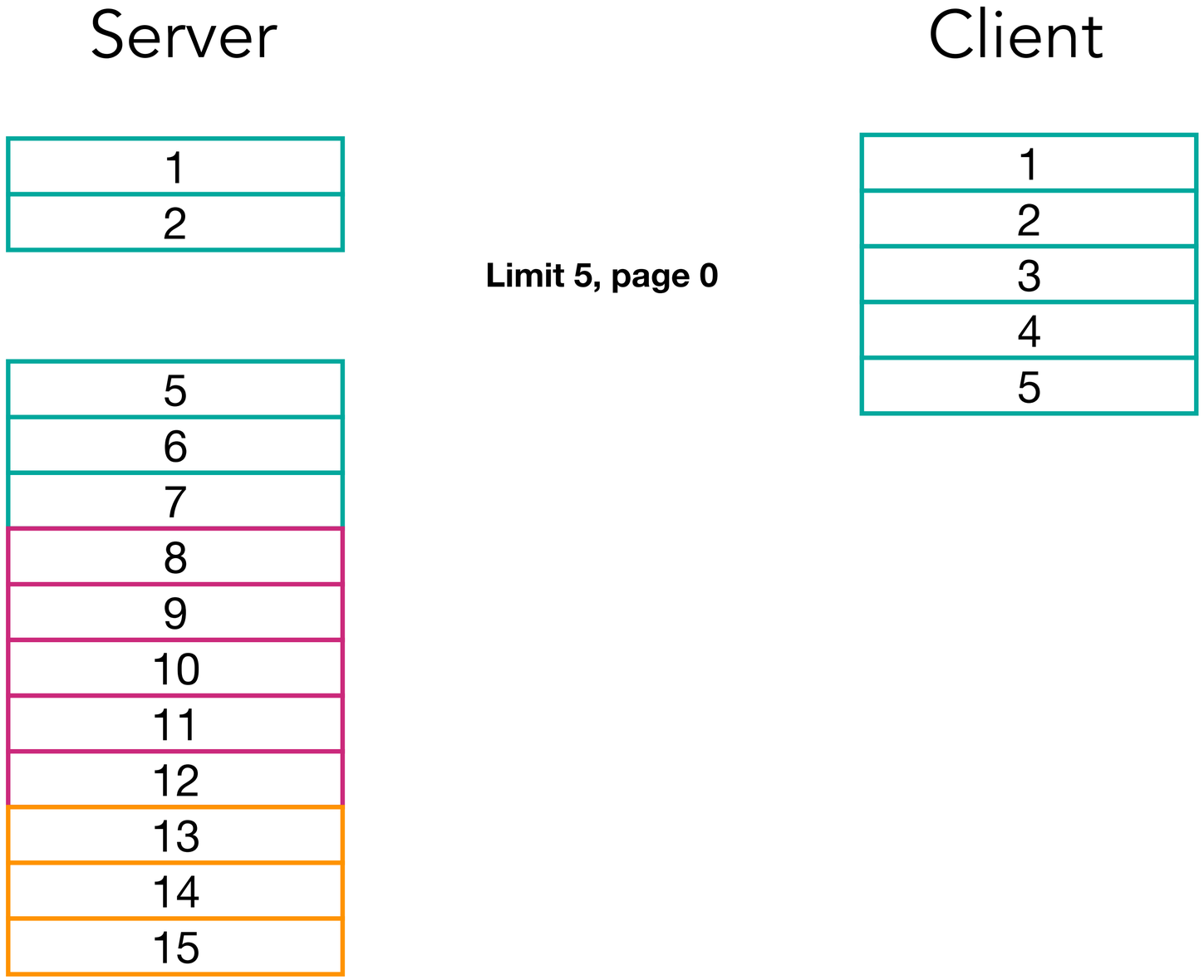
Server

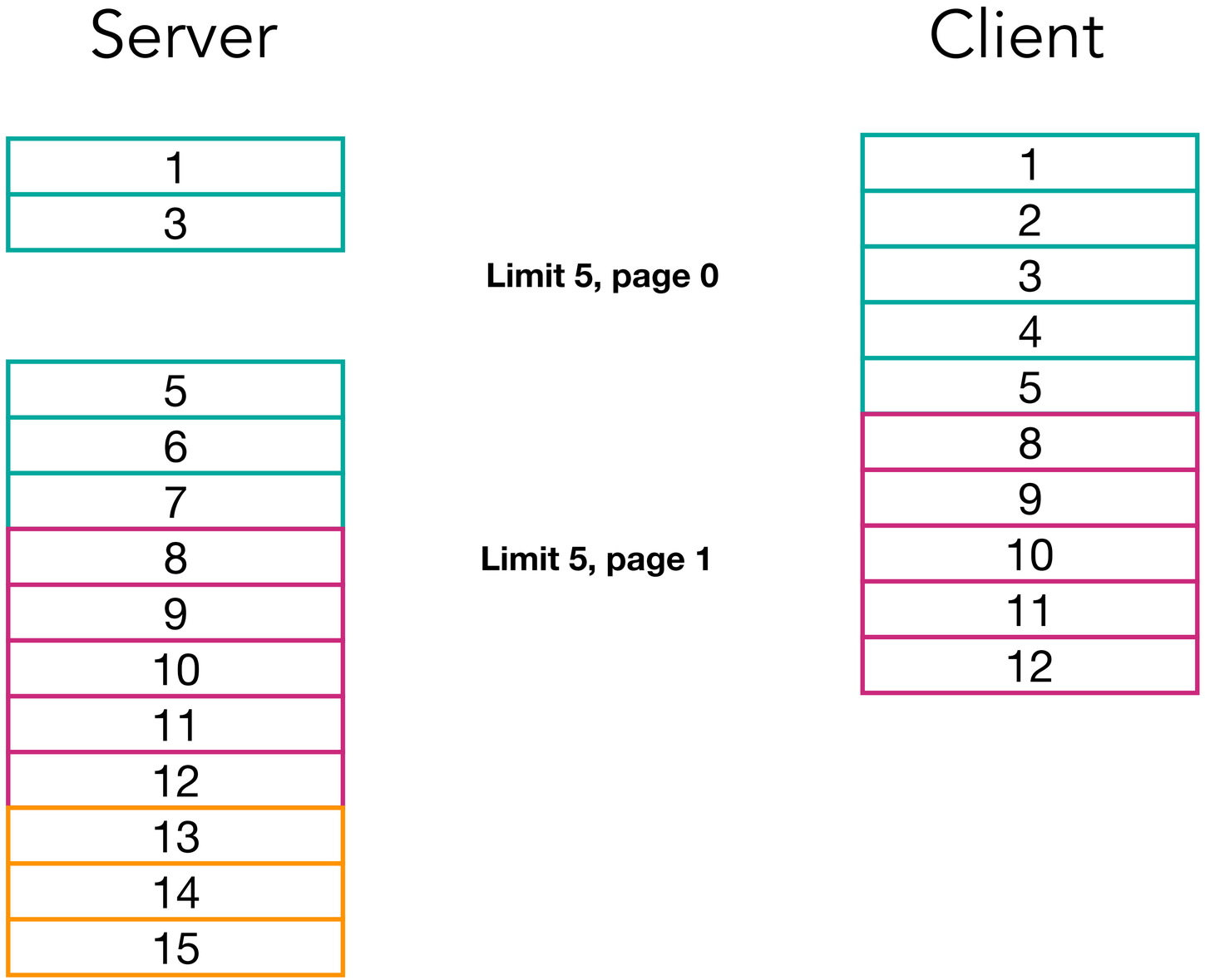
Client




Server
Client
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
Limit 5, page 0
1
2
3
4
5


Server
Client
1
2
5
6
7
8
9
10
11
12
13
14
15
Limit 5, page 0
1
2
3
4
5


Server
Client
1
2
5
6
7
8
9
10
11
12
13
14
15
Limit 5, page 0
1
2
3
4
5


Server
Client
1
3
5
6
7
8
9
10
11
12
13
14
15
Limit 5, page 0
Limit 5, page 1
1
2
3
4
5
8
9
10
11
12

Server

1
3

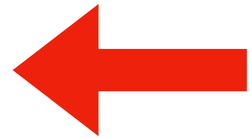
5
6
7
8
9
10
11
12
13
14
15

Limit 5, page 0

Limit 5, page 1

Client

1
2
3
4
5
8
9
10
11
12



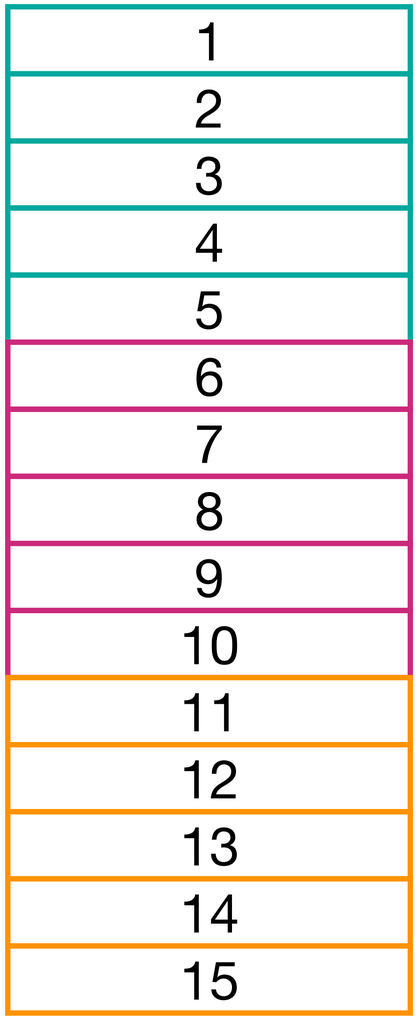
Where are 6 & 7?

```
{
  product(id: $id) {
    title
    recommendedProducts(limit: 5, page: 2) {
      boughtTogetherPercentage
      product {
        title
        image {
          url
        }
      }
    }
    recommendedProductsPageInfo {
      hasNextPage
      hasPreviousPage
    }
  }
}
```

```
{
  product(id: $id) {
    title
    recommendedProducts(limit: 5, after: "4e025") {
      boughtTogetherPercentage
      product {
        title
        image {
          url
        }
      }
    }
    recommendedProductsPageInfo {
      hasNextPage
      hasPreviousPage
    }
  }
}
```

Server

Client



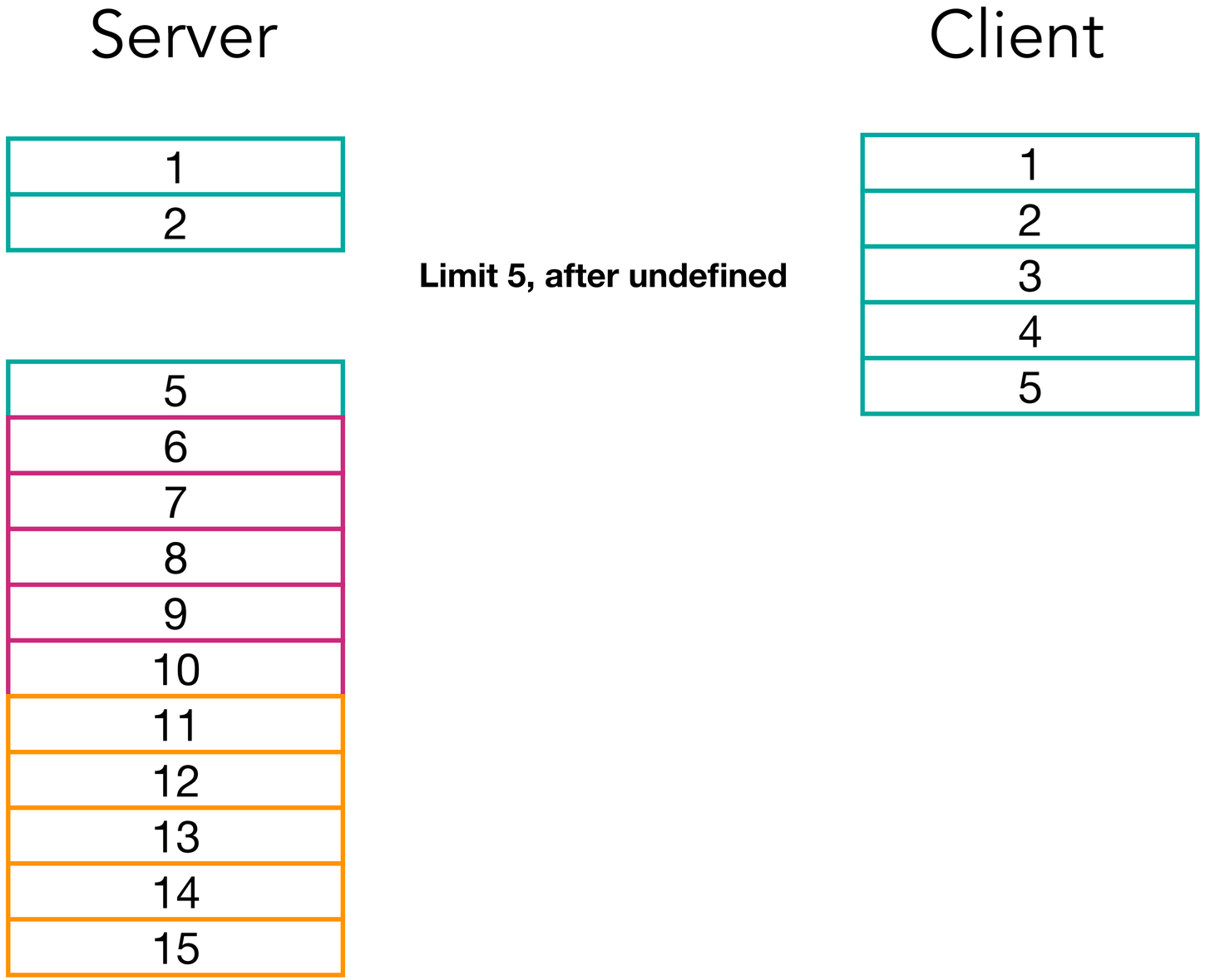
Server

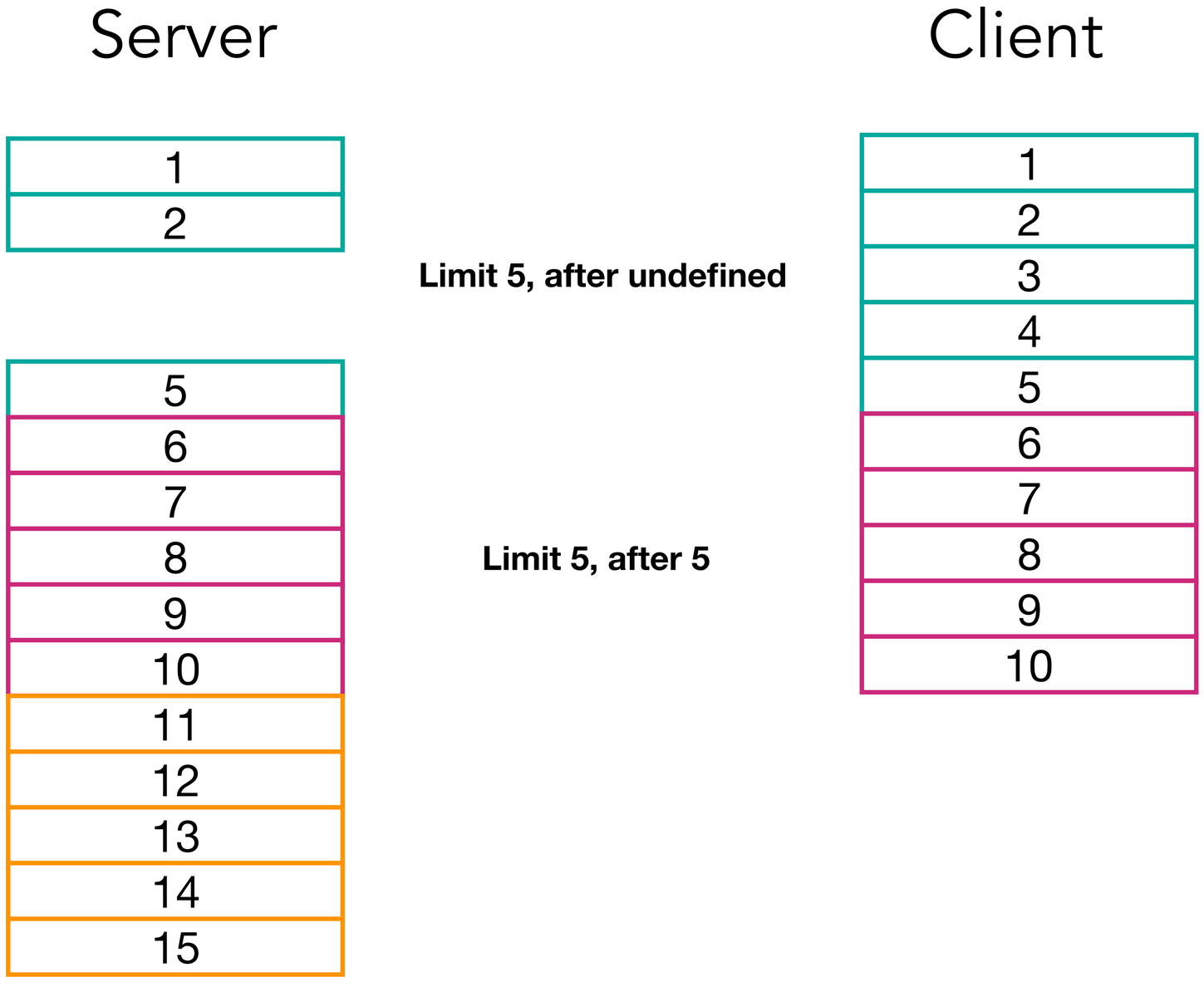
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

Limit 5, after undefined

Client

1
2
3
4
5


Server
Client
1
2
5
6
7
8
9
10
11
12
13
14
15
Limit 5, after undefined
1
2
3
4
5


Server
Client
1
2
Limit 5, after undefined
5
6
7
8
9
10
11
12
13
14
15
Limit 5, after 5
1
2
3
4
5
6
7
8
9
10

```
{
  product(id: $id) {
    title
    recommendedProducts(limit: 5, after: "4e025") {
      boughtTogetherPercentage
      product {
        title
        image {
          url
        }
      }
    }
    recommendedProductsPageInfo {
      hasNextPage
      hasPreviousPage
    }
  }
}
```

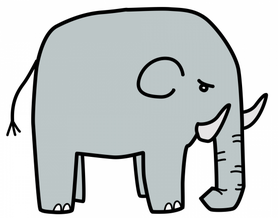
```
{
  product(id: $id) {
    title
    recommendedProducts(limit: 5, after: "4e025") {
      boughtTogetherPercentage
      product {
        title
        image {
          url
        }
      }
    }
    recommendedProductsPageInfo {
      hasNextPage
      hasPreviousPage
      startCursor
      endCursor
    }
  }
}
```

Cursors aren’t perfect!

Messages
Caroline
Edit
For the past couple of weeks I've been seeing your sister
at Trader Joe's buying lots of those single-serving salads. We should have her over for dinner.
!
Not Delivered
What?!? When?!?
Any evening I'm not working. Nothing fancy, just something hot and easy.

Cursors

```
{
  product(id: $id) {
    title
    recommendedProducts(limit: 5, after: "4e025") {
      boughtTogetherPercentage
      product {
        title
        image {
          url
        }
      }
    }
    recommendedProductsPageInfo {
      hasNextPage
      hasPreviousPage
      startCursor
      endCursor
    }
  }
}
```

```
{
  product(id: $id) {
    title
    recommendedProducts(limit: 5, after: "4e025") {
      entries {
        boughtTogetherPercentage
        product {
          title
          image {
            url
          }
        }
      }
      pageInfo {
        hasNextPage
        hasPreviousPage
        startCursor
        endCursor
      }
    }
  }
}
```

```
{
  product(id: $id) {
    title
    recommendedProducts(limit: 5, after: "4e025") {
      edges {
        boughtTogetherPercentage
        node {
          title
          image {
            url
          }
        }
      }
      pageInfo {
        hasNextPage
        hasPreviousPage
        startCursor
        endCursor
      }
    }
  }
}
```