

Further List Operations

Let's explore more features of the list data structure!

WE'LL COVER THE FOLLOWING ^

- Appending a List
- Accessing the Head
- Accessing the N-th Element
- Simple Iteration

Appending a List

A list can be appended to another list using the spread operator. Here's how it works:

```
let myList = [5, 6, 7, 8];  
Js.log([1, 2, 3, 4, ...myList]);
```



Console: `[1,[2,[3,[4,[5,[6,[7,[8,0]]]]]]]]`

However, the code below would not create the correct structure:

```
let list1 = [1, 2, 3, 4];  
let list2 = [5, 6, 7, 8];  
Js.log([list1, ...[list2]]);
```



Output: `[[1,[2,[3,[4,0]]]],[[5,[6,[7,[8,0]]]],0]]`

Instead of one merged list, we get a list of lists containing `list1` and `list2`.

We could define a recursive function and use the list's variant property to join two lists:

```
let list1 = [1, 2, 3, 4];
let list2 = [5, 6, 7, 8];

let rec join = (list1, list2) => {
  switch(list1) {
    | [] => list2
    | [head, ...tail] => [head, ...join(tail, list2)]
  };
};

Js.log(join(list1, list2));
```

Console: [1,[2,[3,[4,[5,[6,[7,[8,0]]]]]]]]]

Alternatively, we can use the `@` operator to concatenate two lists as well:

```
let list1 = [1, 2, 3, 4];
let list2 = [5, 6, 7, 8];

Js.log(list1 @ list2);
```

Console: [1,[2,[3,[4,[5,[6,[7,[8,0]]]]]]]]]

Accessing the Head

We can access the first element of the list using pattern matching:

```
let myList = ["Reason", "JavaScript", "OCaml"];

let getHead = (myList) => {
  switch(myList){
    | [] => ""
    | [head, ...tail] => head
  }
};

Js.log(getHead(myList));
```

Reason also has a predefined function, `List.hd()`, for the process above:

```
let myList = ["Reason", "JavaScript", "OCaml"];  
Js.log(List.hd(myList));
```



Accessing the N-th Element

The last element of a list can be accessed using `List.nth()`. The second argument of this function is the *nth* index at which we want to find the value:

```
let myList = ["Reason", "JavaScript", "OCaml"];  
Js.log(List.nth(myList, 2));
```



Simple Iteration

We can use the `List.iter()` function to iterate over the list. Below, we can see the template of this function:

```
iter(f, list('a'))
```

`f` is a function which will be applied to all the elements being iterated.

Here's an example:

```
let myList = ["Reason", "JavaScript", "OCaml"];  
  
let f = (str: string) => Js.log(str);  
  
List.iter(f, myList);
```



To see all the functions of the list data structure, check out the official

To see all the functions of the list data structure, check out the official documentation [here](#).

In the next lesson, we'll test our theoretical understanding of variants and lists with a quiz.