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Map Reduce & filter

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Map
These are used to transform array.

example

```
const arr = [5, 1, 3, 2, 6];
// double = [10, 2, 6, 4, 12];
// Binary = ["101", "1", "11", "10", "110"]

function double (x) {
    return x * 2;
}
const output = arr.map(double);
console.log(output);

o/p - [10, 2, 6, 4, 12]

function binary (x) {
    return x.toString(2);
}
const output = arr.map(binary);
console.log(output);

o/p - ["101", "1", "11", "10", "110"]

const output = arr.map(function binary (x) {
    return x.toString(2);
});

equivalent

const output = arr.map((x) => {
    return x.toString(2);
});

const output = arr.map((x) => x.toString(2));
```

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Filter

used to filter value inside an array

```
const arr = [5, 1, 3, 2, 6];

function isEven(x) {
    return x % 2 == 0;
}
const output = arr.filter(isEven);
console.log(output); // [2, 6]
```

```
function isOdd(x) {
    return x % 2;
}
const output = arr.filter(isOdd);
console.log(output); // [5, 1, 3]
```

→ Filter logic could be anything like double, greater than a particular value divisible by particular value

["011" any "many more "101"]

```
const output = arr.filter((x) => x > 4);
output = [5, 6]
```

Reduce

- It does not reduce anything.
- Takes an array and come up with a single value out of them.

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logic - sum, maximum, minimum

→ const arr = [5, 1, 3, 2, 6];

function findSum(arr) {
  let sum = 0;
  for (let i = 0; i < arr.length; i++) {
    sum = sum + arr[i];
  }
  return sum;
}

console.log(findSum(arr));

→ const output = arr.reduce(function(acc, cur) {
  acc = acc + cur; → for each value
  return acc;
}, 0);

0 → initial value for acc.

console.log(output);

O/P = 17
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acc = accumulate
cur = current

→ accumulator - generic term.
acc it stores the current result.

Here acc = sum cur = arr[i]

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* const arr = [5, 1, 3, 2, 6];

// function findMax(arr) { }

const output = arr.reduce (function (max, cur){
    if (cur > max){
        max = cur;
    }
    return max;
}, 0);

console.log(output); → 6

* const user = [{ firstname : "Rahul",
lastname : "Kumar",
age : 26
}]

// list of full name
const output = user.map ((x) => x.firstname + " " + x.lastname);

console.log(output);

// How many people are there for particular age.
// { 26: 2, 75: 1 }

```
const output = user.reduce ( function(acc, curr){
    if (acc[curr.age]) {
      acc[curr.age] = ++ acc[curr.age];
    }
    else {
      acc[curr.age] = 1;
    }
    return acc;
},{});

console.log(output);
```

O/P { 26: 2
      75: 1 }

// first name of all the cases who age is less
// than 30

```
const output = user.filter( (x) => x.age<30).
    map((x) => x.firstname);

console.log(output);
```

O/P : ["akshay", "deepika"]

* Chaining is allowed.