Array

How do we store information?

- We use variables to store the data.
- For Example: If I want to store the name of a student, In that case, I will use a variable
  - `var name = “Varun”;`

But What if, I want to store the names of 5 students

```
name1 = “Prateek”;
name2 = “Nrupul”;
name3 = “Yogesh”;
name4 = “Aman”;
name5 = “Albert”;
```

To store 5 names, we need to declare 5 variables.

Isn’t possible that one variable will contain all names?

Yes, It is possible with the array.

Arrays

- The array is a contiguous chunk of memory that can store multiple values.

Declaration of an array

- var arr = [];

If I want to store all 5 names in a single variable, then it is possible through an array

`var arr = [”Prateek”, “Nrupul”,”Yogesh”,”Aman”,”Albert”];`

- Each value is stored at some index.

- the array index starts from 0.

Code 1: Declare and print 3 students names using variables

```
var name1 = “Rahul”;
var name2 = “Shubham”;
var name3 = “Rishabh”;
console.log(name1);
console.log(name2);
console.log(name3);
```

Code 2: Declare and Print 3 students names using an array

```
var names = [”Rahul”, “Shubham”, “Rishabh”];
console.log(names[0]);
console.log(names[1]);
console.log(names[2]);
```

Code 3: Perform the following tasks :

1. **Create an array of vegetables**
2. **Store 3 vegetables**
3. **Print all the vegetables**

```
var vegetables = [”Tomato”, “Beans”, “Onion”];
console.log(vegetables[0]);
console.log(vegetables[1]);
console.log(vegetables[2]);
```

Note: Don’t write vegetables[3] that will give undefined.

How to find the length of an array?

- It means How many elements present in the array.
- Use the length function to calculate the length.

Code 4: Find the length of the vegetables array.

```
var vegetables = [”Tomato”, “Beans”, “Onion”];
console.log(vegetables.length);
```

Code 5: Perform the following tasks :

1. **Create an array price.**
2. **Store the prices of 3 products in the array**
3. **Print the price of the last product.**

Not a generic code :

```
var prices = [45, 71, 29];
console.log(prices[2]);
```

Generic Code :

```
var prices = [45, 71, 29];
last_index = prices.length-1;
console.log(prices[last_index]);
```

How to add elements in an array?

- push() function helps to insert the elements in an array.
- push() always inserts at the last.

Code 6: Insert 3 movie names in the arrays .

```
var items2 = [];
items2.push(”Bahuballi”);
items2.push(”Avengers”);
items2.push(”Spider Man”);
```

[Students Task]

Code 7: Perform the following tasks :

1. **Create an array superheroes**
2. **push 3 superheroes in the array**
3. **Print the array**

```
var superheroes = [];
superheroes.push(”bat man”);
superheroes.push(”super man”);
superheroes.push(”iron man”);
console.log(superheroes);
```

How to update the array?

- Suppose I want to change the first index value.
- `superheroes[0] = “Thor”;`

How to print all elements using Loop?

- Write a for loop from starting i = 0 to length of array - 1.
- print all the elements using a loop.

Code 8: print all the elements of the array using a loop.

```
var movies = [];

movies.push(”bat man”);

movies.push(”super man”);

movies.push(”iron man”);

for(var i = 0; i<movies.length; i++)
{
  console.log(movies[i]);
}

Note : Don't run the loop till movies.length, It will show undefined for last index
because last index does n't exist for movies.
```

[Students Task]

Code 9: Perform the following tasks :

1. **Create an array of movies and actors**
2. **Print all the movies names with actors**

```
var movies = ["bahuballi", "Spider Man", "Iron Man", "Super Man"];
var actors = ["Prabhas", "Tom holland", "Robert Downey", "Henry Cavil"];
for(var i=0; i<movies.length; i++){
  console.log(movies[i]," - ",actors[i]);
}

Note : Length of both arrays should be same
```

How to remove elements from an array?

- To remove elements, we have a pop() function
- pop() function that will remove elements from the last.

Code 10: pop the last 2 elements from an array

```
var movies = [];

movies.push(”bat man”);

movies.push(”super man”);

movies.push(”iron man”);

movies.pop();
movies.pop();
console.log(movies);
```

[Students Task]

Code 11: Perform the following tasks :

1. **Create an array of 6 numbers**
2. **print the numbers array**

3. **delete last 3 numbers from that array**
4. **print the numbers array**

```
First Way

var numbers = [2,3,4,5,6,7];
console.log(numbers);
numbers.pop();
numbers.pop();
numbers.pop();
console.log(numbers);
```

```
Second Way

var numbers = [2,3,4,5,6,7];
console.log(numbers);
for(var i=1; i<=3; i++)
{
  numbers.pop();
}
console.log(numbers);
```

Arrays with Loop and Break

Code 12: Print the first 3 items in the array using a loop.

```
First Way

var movies = ["bahuballi", "Spider Man", "Iron Man", "Super Man"];
for(var i = 1; i<=3; i++)
{
  console.log(movies[i]);
}
```

```
Second Way [ Using Break ]

var movies = ["bahuballi", "Spider Man", "Iron Man", "Super Man"];
for(var i = 0; i<movies.length; i++)
{
  if(i==3)
```

```
  {
    break;
  }
  console.log(movies[i]);
}
```

```
```

Arrays with Loop and Continue

Code 12: Print all movies except the third movie.

```
var movies = ["bahuballi", "Spider Man", "Iron Man", "Super Man"];
for(var i = 0; i<movies.length; i++)
{
  if(i==2)
  {
    continue;
  }
  console.log(movies[i]);
}
```

Code 13: Print all movies except the third and fifth movies.

```
var movies = ["bahuballi", "Spider Man", "Iron Man", "Super Man","hulk","thor"];
for(var i = 0; i<movies.length; i++)
{
  if(i==2 || i==4)
  {
    continue;
  }
  console.log(movies[i]);
}
```

```
```

Code 14 : Print the last 3 items of an products array

```
**Approach 1 :**

var products = ["earphone", "headphones", "mic", "ipad", "cell phone", "laptop"];

var start = products.length - 3;
for(var i=start; i<products.length; i++)
{
  console.log(products[i]);
}
```

Above Approach 1 will fail, if suppose the products array is

var products = ["earphone", "headphones"]

```
**Approach 2 :**

var products = ["earphone", "headphones", "mic", "ipad", "cell phone", "laptop"];

var start = 0;
if(products.length>3)
{
  start = products.length - 3;
}

for(var i=start; i<products.length; i++)
{
  console.log(products[i]);
}
```

Code 15 : For Even Array, print the second half of the array

```
var names = ["A","B","C","D","E","F","G","H"];

var start = Math.floor(names.length/2);

for(var i=start; i<names.length; i++)
{
  console.log(names[i]);
}
```

Code 16 : For Even or Odd Array, print the second half of the array

```
var names = ["A","B","C","D","E","F","G","H","K"];

var start=0;

// Handle Even Array
if(names.length % 2 == 0)
{
  start = names.length/2;
}

// Handle Odd Array
else
{
  start = Math.floor(names.length/2);
}

for(var i=start; i<names.length; i++)
{
  console.log(names[i]);
}
```

Code 17 : For Even or Odd Array, print the first half of the array

```
var names = ["A","B","C","D","E","F","G","H","K"];

var start=0;
if(names.length % 2 == 0)
{
  end = names.length/2;
}

else
{
  end = Math.floor(names.length/2);
}

for(var i=0; i<end; i++)
{
  console.log(names[i]);
}
```

Code 18 : Given marks, find the total marks

```
var marks = [10, 15, 19, 20, 21];
var sum=0;
for(var i = 0; i<marks.length; i++)
{
```

```
  sum = sum+marks[i];
}

console.log(sum);
```

Code 19 : Find the sum of all subject marks and average also.

```
var subject_marks = [10, 15, 19, 20, 21];
var sum_marks = 0;

for(var i=0; i<subject_marks.length; i++)
{
  sum_marks = sum_marks + subject_marks[i];
}

var average = Math.floor(sum_marks/subject_marks.length);
console.log("Total sum is ",sum_marks);
console.log("Average is ",average);
```

Code 20 : Given marks, find the maximum marks

```
var marks = [10, 15, 19, 20, 21,45, 31, 18];
var max = -Infinity;

for(var i = 0; i<marks.length; i++)
{
  if(max<marks[i])
  {
    max = marks[i];
  }
}
console.log(max);
```