Array in Shell Scripting
An array is a systematic arrangement of the same type of data. But in Shell script Array is a variable which contains multiple values may be of same type or different type since by default in shell script everything is treated as a string. An array is zero-based ie indexing start with 0.

How to Declare Array in Shell Scripting?
We can declare an array in a shell script in different ways.

1. Indirect Declaration
   In Indirect declaration, We assigned a value in a particular index of Array Variable. No need to first declare.

```
ARRAYNAME[INDEXNR]=value
```

2. Explicit Declaration

   In Explicit Declaration, First We declare array then assigned the values.

```
declare -a ARRAYNAME
```

3. Compound Assignment
   In Compount Assignment, We declare array with a bunch of values. We can add other values later too.

```
ARRAYNAME=(value1 value2  .... valueN)
```

or
[indexnumber=]string

```
ARRAYNAME=([1]=10 [2]=20 [3]=30)
```

To Print Array Value in Shell Script?
To Print All elements
`[@]` & `[*]` means All elements of Array.

```
echo ${ARRAYNAME[*]}
```

```
1.#! /bin/bash

# To declare static Array
arr=(prakhar ankit 1 rishabh manish abhinav)

# To print all elements of array
echo ${arr[@]}
echo ${arr[*]}
echo ${arr[@]:0}
echo ${arr[*]:0}

2. # To print first element

echo ${arr[0]}
echo ${arr}

3. # To print particular element

echo ${arr[3]}
echo ${arr[1]}

4. # To print elements from a particular index

echo ${arr[@]:0}
echo ${arr[@]:1}
```

```
echo ${arr[@]:2}
echo ${arr[0]:1}

5. # To print elements in range

echo ${arr[@]:1:4}
echo ${arr[@]:2:3}
echo ${arr[0]:1:3}

6. # Length of Particular element

echo ${#arr[0]}
echo ${#arr}

7. # Size of an Array

echo ${#arr[@]}
echo ${#arr[*]}
```

o Search in Array

`arr[@]` : All Array Elements.

`/Search_using_Regular_Expression/` : Search in Array

Search Returns 1 if it found the pattern else it return zero. It does not alter the original array elements.

```
8.# Search in Array
echo ${arr[@]/*[aA]*/}

9. # Replacing Substring Temporary

echo ${arr[@]//a/A}
echo ${arr[@]}
echo ${arr[0]//r/R}
```

To delete Array Variable in Shell Script?

To delete index-1 element

```
unset ARRAYNAME[1]
```

To delete the whole Array

```
unset ARRAYNAME
```

while loop

```
10. # !/bin/bash

# To declare static Array
arr=(1 12 31 4 5)
i=0

# Loop upto size of array
# starting from index, i=0
while [ $i -lt ${#arr[@]} ]
do
    # To print index, ith
    # element
    echo ${arr[$i]}

    # Increment the i = i + 1
```

```
    i=`expr $i + 1`
done
```

For Loop

11.
```
# !/bin/bash
# To declare static Array
arr=(1 2 3 4 5)

# loops iterate through a
# set of values until the
# list (arr) is exhausted
for i in "${arr[@]}"
do
    # access each element
    # as $i
    echo $i
done
```

To Read the array elements at run time and then Print the Array.

1. Using While-loop

12.
```
# !/bin/bash

# To input array at run
# time by using while-loop

# echo -n is used to print
# message without new line
echo -n "Enter the Total numbers :"
read n
echo "Enter numbers :"
i=0

# Read upto the size of
# given array starting from
# index, i=0
while [ $i -lt $n ]
do
    # To input from user
    read a[$i]

    # Increment the i = i + 1
    i=`expr $i + 1`
done

# To print array values
# starting from index, i=0
echo "Output :"
i=0

while [ $i -lt $n ]
do
    echo ${a[$i]}
```

```
    # To increment index
    # by 1, i=i+1
    i=`expr $i + 1`
done
```

using for loop

13.
```
# !/bin/bash

# To input array at run
# time by using for-loop

echo -n "Enter the Total numbers :"
read n
echo "Enter numbers:"
i=0

# Read upto the size of
# given array starting
# from index, i=0
while [ $i -lt $n ]
do
    # To input from user
    read a[$i]

    # To increment index
    # by 1, i=i+1
    i=`expr $i + 1`
done

# Print the array starting
# from index, i=0
echo "Output :"

for i in "${a[@]}"
do
    # access each element as $i
    echo $i
done
```