

## 1. a) How is an array different from a list?

### 1. Array in Tcl:

- In Tcl, an array is a collection of key-value pairs where each element is accessed by a unique key.
- Arrays in Tcl are associative arrays, meaning they are indexed by strings rather than numeric indices.
- Arrays in Tcl are declared using the 'array set' command and accessed using the array name and key.

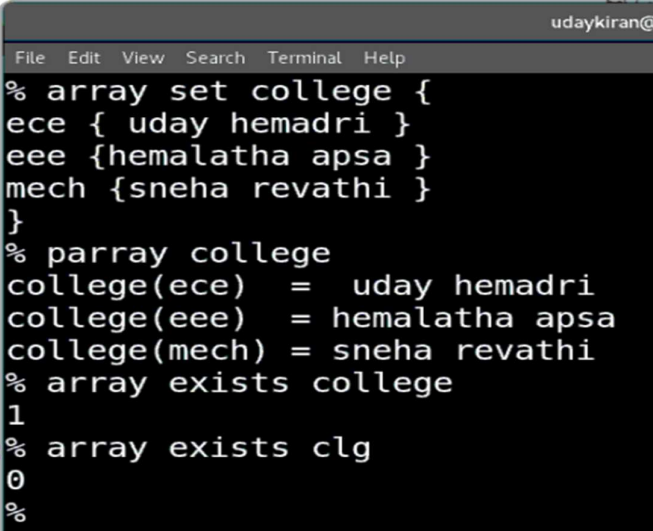
### 2. List in Tcl:

- In Tcl, a list is a sequence of elements separated by whitespace. Lists are ordered collections of elements.
- Lists in Tcl are typically used to store and manipulate sequences of data.
- Lists in Tcl are created using curly braces `{}` or the 'list' command.

### Differences between list and arrays Tcl:

- In Tcl, arrays are used to store key-value pairs, while lists are used to store sequences of elements.
- Arrays are accessed using keys, while lists are accessed using indices or by iterating over the elements.
- Arrays are more suitable for mapping keys to values, while lists are more appropriate for storing ordered sequences of data.

## b) How to check for the existence of an array?



```
udaykiran@
File Edit View Search Terminal Help
% array set college {
ece { uday hemadri }
eee {hemalatha apsa }
mech {sneha revathi }
}
% parray college
college(ece) = uday hemadri
college(eee) = hemalatha apsa
college(mech) = sneha revathi
% array exists college
1
% array exists clg
0
%
```

For checking the existence of array we uses

Syntax <b>array exists arrayname</b>
--------------------------------------

If array exists in terminal it prints **1**

If array does not exists in terminal it prints **0**

## **2. How is an associative array different from a conventional array?**

An array is a systematic arrangement of a group of elements using indices.

Types of arrays:

1. conventional array
2. associative arrays

In Tcl scripting language, there are two main types of arrays: conventional arrays and associative arrays. Here are the key differences between the two:

### **1. Conventional Array:**

- In Tcl, a conventional array is similar to arrays in other programming languages. It is a collection of elements indexed by integers starting from 0.
- Conventional arrays in Tcl are ordered collections of elements where each element is accessed using a numeric index.
- Elements in conventional arrays are stored in contiguous memory locations.

The syntax for the conventional array is shown below.

<b>set ArrayName(Index) value</b>
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```

% exit
[udaykiran@localhost ~]$ tclsh8.6
% set month(1) january
january
% set month(2) february
february
% set month(3) march
march
% set month(4) april
april
% parray month
month(1) = january
month(2) = february
month(3) = march
month(4) = april
%

```

## 2. Associative Array:

- In Tcl, an associative array is also known as a dictionary or hash table. It is a collection of key-value pairs where each element is accessed by a unique key.

- Associative arrays in Tcl are unordered collections of elements where each element is associated with a specific key.

- Elements in associative arrays are not stored in contiguous memory locations; they are accessed using keys, which can be strings.

```

File Edit View Search Terminal Help
% array set college {
ece { uday hemadri }
eee {hemalatha apsa }
mech {sneha revathi }
}
% parray college
college(ece) = uday hemadri
college(eee) = hemalatha apsa
college(mech) = sneha revathi
%

```

Differences in between conventional arrays and associative arrays :

- Conventional arrays in Tcl are indexed by integers, while associative arrays are indexed by strings.
- Conventional arrays are ordered, while associative arrays are unordered.
- Conventional arrays are accessed using numeric indices, while associative arrays are accessed using keys.

## 3. What is the command syntax to fetch the index values of an array?

Syntax:

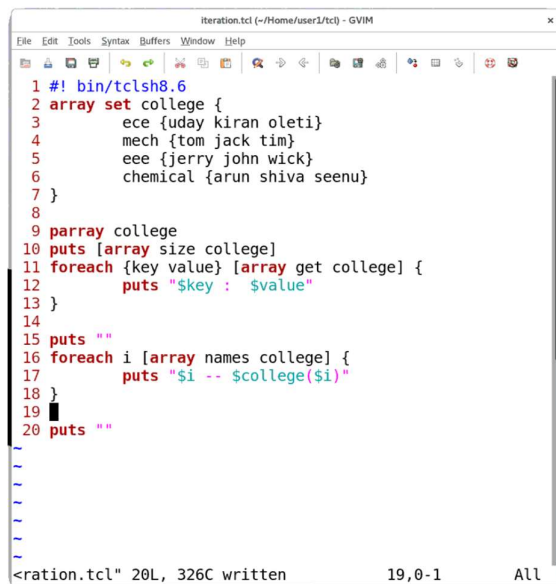
**Puts [array names arrayname]**

```

% parray college
college(ece) = uday hemadri
college(eee) = hemalatha apsa
college(mech) = sneha revathi
% array exists college
1
% array exists clg
0
%
% puts [array names college]
mech ece eee
% puts [array get college ece
]
ece { uday hemadri }
%

```

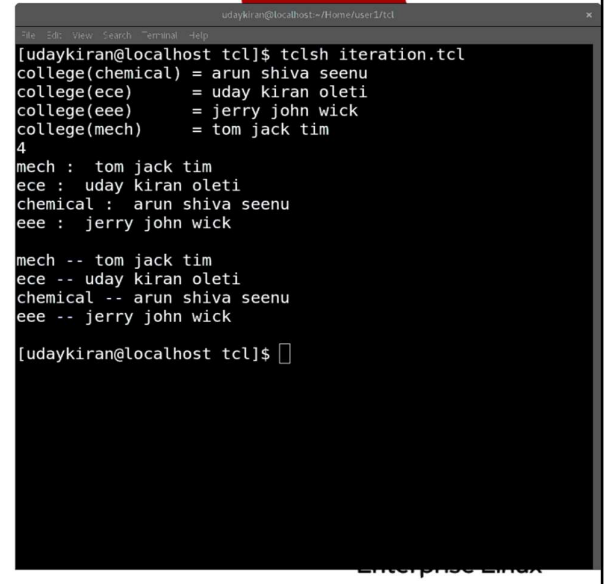
#### 4. How to iterate over arrays using any loop, an example code?



```

1 #! bin/tclsh8.6
2 array set college {
3     ece {uday kiran oleti}
4     mech {tom jack tim}
5     eee {jerry john wick}
6     chemical {arun shiva seenu}
7 }
8
9 parray college
10 puts [array size college]
11 foreach {key value} [array get college] {
12     puts "$key : $value"
13 }
14
15 puts ""
16 foreach i [array names college] {
17     puts "$i -- $college($i)"
18 }
19
20 puts ""

```



```

[udaykiran@localhost tcl]$ tclsh iteration.tcl
college(chemical) = arun shiva seenu
college(ece) = uday kiran oleti
college(eee) = jerry john wick
college(mech) = tom jack tim
4
mech : tom jack tim
ece : uday kiran oleti
chemical : arun shiva seenu
eee : jerry john wick

mech -- tom jack tim
ece -- uday kiran oleti
chemical -- arun shiva seenu
eee -- jerry john wick

[udaykiran@localhost tcl]$

```