Using the Binary Search Algorithm and trace table examples at the end of this document, complete the trace tables below for the Color Array. Upload this document to github and submit the link to your repository to the dropbox.

#### 1st search: violet

First	Last	Middle	Comparison
0	10	5	Indigo< violet
6	10	8	Red< violet
9	10	9	Violet = violet

#### 2nd search: green

First	Last	Middle	Comparison
0	10	5	Indigo > green
0	4	2	Chartreuse < green
3	4	3	Dark brown < green
4	4	4	Green = green

#### 3rd search: yellow

First	Last	Middle	Comparison
0	10	5	Indigo < yellow
6	10	8	red < yellow
9	10	9	Violet < yellow
10	10	10	Yellow = yellow

#### Color array:

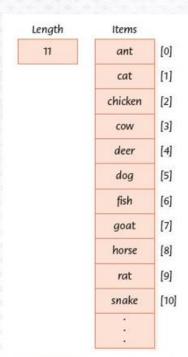
aqua	[0]
brown	[1]
chartreuse	[2]
dark brown	[3]
green	[4]
indigo	[5]
lavender	[6]
magenta	[7]
red	[8]
violet	[9]
yellow	[10]

### **Binary Search**

Set first to 0
Set last to length-1
Set found to FALSE
WHILE (first <= last AND NOT found)
Set middle to (first + last)/ 2
IF (item equals data[middle]))
Set found to TRUE
ELSE
IF (item < data[middle])
Set last to middle - 1
ELSE
Set first to middle + 1
RETURN found

Above: Binary Search Algorithm

## **Binary Search**



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F	Gl	JRE	7.9	Binary	search	example

First	Last	Middle	Comparison	
0	10	5	cat < dog	
0	4	2	cat < chicken	
0	1	0	cat > ant	
1	1	1	cat = cat	Return: true

# Searching for fish First Last Middle Comparison 0 10 5 fish > dog 6 10 8 fish < horse</td> 6 7 6 fish = fish Return: true

First	Last	Middle	Comparison	
0	10	5	zebra > dog	
6	10	8	zebra > horse	
9	10	9	zebra > rat	
10	10	10	zebra > snake	
11	10		first > last	Return: false

FIGURE 7.10 Trace of the binary search