markdown

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# R-Markdown for Binary Search

### Displaying the Input Array

**The following *display* chunk displays the array i.e. used as input for the Binary search implementation** *(We just taking the array as input, as not performing any other task, in order to isplay the same as per the requirement of the question)*

len <- as.numeric(readline(prompt = "Enter length of the array: "))  
  
arr <- NULL  
for(i in 1:len) {  
 num <- as.numeric(readline(prompt = "Enter an element: "))  
 arr <- c(arr, num)  
}  
  
print(arr)

## [1] 2 5 7 9

### Function for Binary Search

The following function takes 2 parameters viz list (i.e. the array) and input (i.e. the element to be searched) and performs the Binary Search It does **NOT** displays any output, rather the function return TRUE if the searched element **exists** and FALSE, otherwise.

bsearch <- function(list, input){  
   
 beg = 1  
 end = as.numeric(length(list))  
   
 while(beg <= end) {  
 mid = as.integer((beg+end)/2)  
   
 if(list[[mid]] == input) {  
 return (TRUE)  
 }  
 else if(input < list[[mid]]) {  
 end <- mid-1  
 } else {  
 beg <- mid+1  
 }  
   
 }  
   
 return (FALSE)  
}

### Searching an Element

The following code-chunk calls the above defined bsearch() function in order to search an element (8 here) in the provided array.

If the function returns TRUE this block dosplays a message **Found!!**, else print **Not Found!!**

*(We can also take the element i.e. to be searched as user-input using function readline())*

res <- bsearch(arr, 8)  
  
if (res) {  
 print("Found!!")   
} else {  
 print("Not Found!!")  
}

## [1] "Not Found!!"