Lab Homework 5

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# Q1: Write a function that could simulate N rounds of the game and return the proportion of times you win the bet.

gameFunction <- function(N){  
 results <- replicate(N,  
 {  
 x<-rbinom(4,1,1/6)  
 if(sum(x)>=1){  
 win<-TRUE  
 }  
 else{  
 win<-FALSE  
 }  
 })  
 winPortion <- sum(results==TRUE)/N  
 return(winPortion)  
}

# Test:

N1 <- 1000  
N2 <- 10000  
winRate1<-gameFunction(N1)  
winRate2<-gameFunction(N1)  
cat(paste("When N equals 1000, the win rate is ",winRate1,". When N equals 10000, the win rate is ",winRate2))

## When N equals 1000, the win rate is 0.5 . When N equals 10000, the win rate is 0.529

# Q2: Write a function that will find the smallest element of a given vector.

#note: the function "findSmallest" will return 2 numbers, the first number is the smallest element, and the second number is the index of that element.   
findSmallest <- function(v){  
smallest<- v[1]  
location<-1  
 if(length(v)>1){  
 for(i in 2:length(v)){  
 if(smallest>v[i]){  
 smallest <- v[i]  
 location <- i  
 }  
 }  
 }  
return(c(smallest,location))  
}

# Test

test1<-c(1,4,2,0,5)  
result1<-findSmallest(test1)  
cat(paste("The smallest element is ",result1[1]," and its index is", result1[2]))

## The smallest element is 0 and its index is 4