```
---
title: "R Data Types and Data Structures"
output:
  pdf_document: default
  html_document:
    df_print: paged
editor_options:
  chunk_output_type: console
---

```{r}
Entering_bus=function(){
  return(sample(c(0,1,2),size=1,prob=c(0.50,0.40,0.10)))
}
```

```{r}
Exiting_bus=function(number_prev){
  return(sum(sample(c(1,0),size=number_prev,replace=TRUE,prob=c(0.20,0.80))))
}
```

####Code to calculate using simulation the probability that the bus is empty after
visiting the 10th stop
```{r}
bus_10Passenger=function(){
  bus_seat=c()
  for (j in c(1:10)){
    if(j==1){
      bus_seat=c(bus_seat,Entering_bus())       #only considering in first stop
    }
    else if(bus_seat[j-1]==0){
      bus_seat=c(bus_seat,Entering_bus())  #no one entered in last stop so consider entry
not exit
    }
    else{
      bus_seat=c(bus_seat,bus_seat[j-1]+Entering_bus()-Exiting_bus(bus_seat[j-1]))
    }
  }
  return(bus_seat)
}
```

####simulating 100000 people entering and exiting bus
```{r}
nsimulations=100000
simulatedData=replicate(nsimulations,bus_10Passenger())
```

####zero entries in 10th stop
```{r}
table(simulatedData[10,])
```

```{r}
sum(simulatedData[10,]==0)/length(simulatedData[10,])
```
```