

## Lab 06 - Preyash 20BPS1022

### CSE3505 - LAB

Date: 04-11-2022

#### Part A:

#### Sample User Defined Functions Programs

```
my_function <-function() { # create
  print("Hello World!")
}

my_function()

## [1] "Hello World!"

evenodd <- function(x){
  if(x%%2==0)
    return("even")
  else
    return("odd")
}

print(evenodd(4))

## [1] "even"

Rectangle = function(length, width){
  area = length * width
  perimeter = 2 * (length + width)
  # create an object called result which is
  # a list of area and perimeter
  result = list("Area"= area, "Perimeter"= perimeter)
  return(result)
}

resultList = Rectangle(2, 3)
print(resultList["Area"])

## $Area
## [1] 6
```

```

print(resultList["Perimeter"])

## $Perimeter
## [1] 10

# Create a function to print squares of numbers in sequence.
newfunction <-function(a) {
  for(i in 1:a) {
    b <-i^2
    print(b)
  }
}

# Call the function newfunction supplying 6 as an argument.
newfunction(6)

## [1] 1
## [1] 4
## [1] 9
## [1] 16
## [1] 25
## [1] 36

```

## Part-B

### Visualization using basic graphics

```

##### ---- P A R T - B-----#####

library(MASS)

## Warning: package 'MASS' was built under R version 4.1.3

library(dplyr)

## Warning: package 'dplyr' was built under R version 4.1.3

##
## Attaching package: 'dplyr'

## The following object is masked from 'package:MASS':
##
##      select

## The following objects are masked from 'package:stats':
##
##      filter, lag

## The following objects are masked from 'package:base':
##
##      intersect, setdiff, setequal, union

```

	Sex	Wr.Hnd	NW.Hnd	W.Hnd	Fold	Pulse	Clap	Exer	Smoke	Height	
## 1	Female	18.5	18.0	Right	R on L	92	Left	Some	Never	173.00	M
## 2	Male	19.5	20.5	Left	R on L	104	Left	None	Regul	177.80	Imp
## 3	Male	18.0	13.3	Right	L on R	87	Neither	None	Occas	NA	
## 4	Male	18.8	18.9	Right	R on L	NA	Neither	None	Never	160.00	M
## 5	Male	20.0	20.0	Right	Neither	35	Right	Some	Never	165.00	M
## 6	Female	18.0	17.7	Right	L on R	64	Right	Some	Never	172.72	Imp
## 7	Male	17.7	17.7	Right	L on R	83	Right	Freq	Never	182.88	Imp
## 8	Female	17.0	17.3	Right	R on L	74	Right	Freq	Never	157.00	M
## 9	Male	20.0	19.5	Right	R on L	72	Right	Some	Never	175.00	M
## 10	Male	18.5	18.5	Right	R on L	90	Right	Some	Never	167.00	M
## 11	Female	17.0	17.2	Right	L on R	80	Right	Freq	Never	156.20	Imp
## 12	Male	21.0	21.0	Right	R on L	68	Left	Freq	Never	NA	
## 13	Female	16.0	16.0	Right	L on R	NA	Right	Some	Never	155.00	M
## 14	Female	19.5	20.2	Right	L on R	66	Neither	Some	Never	155.00	M
## 15	Male	16.0	15.5	Right	R on L	60	Right	Some	Never	NA	
## 16	Female	17.5	17.0	Right	R on L	NA	Right	Freq	Never	156.00	M
## 17	Female	18.0	18.0	Right	L on R	89	Neither	Freq	Never	157.00	M
## 18	Male	19.4	19.2	Left	R on L	74	Right	Some	Never	182.88	Imp
## 19	Male	20.5	20.5	Right	L on R	NA	Left	Some	Never	190.50	Imp
## 20	Male	21.0	20.9	Right	R on L	78	Right	Freq	Never	177.00	M
## 21	Male	21.5	22.0	Right	R on L	72	Left	Freq	Never	190.50	Imp
## 22	Male	20.1	20.7	Right	L on R	72	Right	Freq	Never	180.34	Imp
## 23	Male	18.5	18.0	Right	L on R	64	Right	Freq	Never	180.34	Imp

## 24 etric	Male	21.5	21.2	Right	R on L	62	Right	Some	Never	184.00	M
## 25 <NA>	Female	17.0	17.5	Right	R on L	64	Left	Some	Never	NA	
## 26 <NA>	Male	18.5	18.5	Right	Neither	90	Neither	Some	Never	NA	
## 27 erial	Male	21.0	20.7	Right	R on L	90	Right	Some	Never	172.72	Imp
## 28 erial	Male	20.8	21.4	Right	R on L	62	Neither	Freq	Never	175.26	Imp
## 29 <NA>	Male	17.8	17.8	Right	L on R	76	Neither	Freq	Never	NA	
## 30 etric	Male	19.5	19.5	Right	L on R	79	Right	Some	Never	167.00	M
## 31 <NA>	Female	18.5	18.0	Right	R on L	76	Right	None	Occas	NA	
## 32 etric	Male	18.8	18.2	Right	L on R	78	Right	Freq	Never	180.00	M
## 33 erial	Female	17.1	17.5	Right	R on L	72	Right	Freq	Heavy	166.40	Imp
## 34 etric	Male	20.1	20.0	Right	R on L	70	Right	Some	Never	180.00	M
## 35 <NA>	Male	18.0	19.0	Right	L on R	54	Neither	Some	Regul	NA	
## 36 etric	Male	22.2	21.0	Right	L on R	66	Right	Freq	Occas	190.00	M
## 37 etric	Female	16.0	16.5	Right	L on R	NA	Right	Some	Never	168.00	M
## 38 etric	Male	19.4	18.5	Right	R on L	72	Neither	Freq	Never	182.50	M
## 39 etric	Male	22.0	22.0	Right	R on L	80	Right	Some	Never	185.00	M
## 40 etric	Male	19.0	19.0	Right	R on L	NA	Neither	Freq	Occas	171.00	M
## 41 etric	Female	17.5	16.0	Right	L on R	NA	Right	Some	Never	169.00	M
## 42 erial	Female	17.8	18.0	Right	R on L	72	Right	Some	Never	154.94	Imp
## 43 etric	Male	NA	NA	Right	R on L	60	<NA>	Some	Never	172.00	M
## 44 erial	Female	20.1	20.2	Right	L on R	80	Right	Some	Never	176.50	Imp
## 45 erial	Female	13.0	13.0	<NA>	L on R	70	Left	Freq	Never	180.34	Imp
## 46 erial	Male	17.0	17.5	Right	R on L	NA	Neither	Freq	Never	180.34	Imp
## 47 etric	Male	23.2	22.7	Right	L on R	84	Left	Freq	Regul	180.00	M
## 48 etric	Male	22.5	23.0	Right	R on L	96	Right	None	Never	170.00	M

## 49 etric	Female	18.0	17.6	Right	R on L	60	Right	Some	Occas	168.00	M
## 50 etric	Female	18.0	17.9	Right	R on L	50	Left	None	Never	165.00	M
## 51 etric	Male	22.0	21.5	Left	R on L	55	Left	Freq	Never	200.00	M
## 52 etric	Male	20.5	20.0	Right	L on R	68	Right	Freq	Never	190.00	M
## 53 erial	Male	17.0	18.0	Right	L on R	78	Left	Some	Never	170.18	Imp
## 54 etric	Male	20.5	19.5	Right	L on R	56	Right	Freq	Never	179.00	M
## 55 etric	Male	22.5	22.5	Right	R on L	65	Right	Freq	Regul	182.00	M
## 56 etric	Male	18.5	18.5	Right	L on R	NA	Neither	Freq	Never	171.00	M
## 57 erial	Female	15.5	15.4	Right	R on L	70	Neither	None	Never	157.48	Imp
## 58 <NA>	Male	19.5	19.7	Right	R on L	72	Right	Freq	Never	NA	
## 59 erial	Male	19.5	19.0	Right	L on R	62	Right	Freq	Never	177.80	Imp
## 60 erial	Male	20.6	21.0	Left	L on R	NA	Left	Freq	Occas	175.26	Imp
## 61 etric	Male	22.8	23.2	Right	R on L	66	Neither	Freq	Never	187.00	M
## 62 erial	Female	18.5	18.2	Right	R on L	72	Neither	Freq	Never	167.64	Imp
## 63 etric	Female	19.6	19.7	Right	L on R	70	Right	Freq	Never	178.00	M
## 64 etric	Female	18.7	18.0	Left	L on R	NA	Left	None	Never	170.00	M
## 65 etric	Female	17.3	18.0	Right	L on R	64	Neither	Freq	Never	164.00	M
## 66 etric	Male	19.5	19.8	Right	Neither	NA	Right	Freq	Never	183.00	M
## 67 etric	Female	19.0	19.1	Right	L on R	NA	Neither	Freq	Never	172.00	M
## 68 <NA>	Female	18.5	18.0	Right	R on L	64	Right	Freq	Never	NA	
## 69 etric	Male	19.0	19.0	Right	L on R	NA	Right	Some	Never	180.00	M
## 70 <NA>	Male	21.0	19.5	Right	L on R	80	Left	None	<NA>	NA	
## 71 etric	Female	18.0	17.5	Right	L on R	64	Left	Freq	Never	170.00	M
## 72 etric	Male	19.4	19.5	Right	R on L	NA	Right	Freq	Heavy	176.00	M
## 73 etric	Female	17.0	16.6	Right	R on L	68	Right	Some	Never	171.00	M

## 74 erial	Female	16.5	17.0	Right	L on R	40	Left	Freq	Never	167.64	Imp
## 75 etric	Female	15.6	15.8	Right	R on L	88	Left	Some	Never	165.00	M
## 76 etric	Female	17.5	17.5	Right	Neither	68	Right	Freq	Heavy	170.00	M
## 77 etric	Female	17.0	17.6	Right	L on R	76	Right	Some	Never	165.00	M
## 78 erial	Female	18.6	18.0	Right	L on R	NA	Neither	Freq	Heavy	165.10	Imp
## 79 erial	Female	18.3	18.5	Right	R on L	68	Neither	Some	Never	165.10	Imp
## 80 erial	Male	20.0	20.5	Right	L on R	NA	Right	Freq	Never	185.42	Imp
## 81 <NA>	Male	19.5	19.5	Left	R on L	66	Left	Some	Never	NA	
## 82 erial	Male	19.2	18.9	Right	R on L	76	Right	Freq	Never	176.50	Imp
## 83 <NA>	Female	17.5	17.5	Right	R on L	98	Left	Freq	Never	NA	
## 84 <NA>	Female	17.0	17.4	Right	R on L	NA	Neither	Some	Never	NA	
## 85 erial	Male	23.0	23.5	Right	L on R	90	Right	Freq	Never	167.64	Imp
## 86 etric	Female	17.7	17.0	Right	R on L	76	Right	Some	Never	167.00	M
## 87 erial	Female	18.2	18.0	Right	L on R	70	Right	Some	Never	162.56	Imp
## 88 etric	Female	18.3	18.5	Right	R on L	75	Left	Freq	Never	170.00	M
## 89 etric	Male	18.0	18.0	Right	Neither	60	Right	Freq	Never	179.00	M
## 90 <NA>	Female	18.0	17.7	Left	R on L	92	Left	Some	Never	NA	
## 91 etric	Male	20.5	20.0	Right	R on L	75	Left	Some	Never	183.00	M
## 92 <NA>	Female	17.5	18.0	Right	Neither	NA	Right	Some	Never	NA	
## 93 etric	Female	18.2	17.5	Right	L on R	70	Right	Some	Never	165.00	M
## 94 etric	Female	18.2	18.5	Right	R on L	NA	Right	Some	Never	168.00	M
## 95 etric	Male	21.3	20.8	Right	R on L	65	Right	Freq	Heavy	179.00	M
## 96 <NA>	Female	19.0	18.8	Right	L on R	NA	Right	Some	Never	NA	
## 97 etric	Male	20.0	19.5	Right	R on L	68	Neither	Freq	Regul	190.00	M
## 98 etric	Female	17.5	17.5	Right	R on L	60	Right	Freq	Never	166.50	M

## 99	Male	19.5	19.4	Right	Neither	NA	Right	Freq	Never	165.00	M
## 100	Female	19.4	19.6	Right	R on L	68	Neither	Freq	Never	175.26	Imp
## 101	Male	21.9	22.2	Right	R on L	NA	Right	Some	Never	187.00	M
## 102	Male	18.9	19.1	Right	L on R	60	Neither	None	Never	170.00	M
## 103	Female	16.0	16.0	Right	Neither	NA	Right	Some	Never	159.00	M
## 104	Female	17.5	17.3	Right	R on L	72	Right	Freq	Never	175.00	M
## 105	Female	17.5	17.0	Right	R on L	80	Left	Some	Heavy	163.00	M
## 106	Female	19.5	18.5	Right	R on L	80	Right	Some	Never	170.00	M
## 107	Female	16.2	16.4	Right	R on L	NA	Right	Freq	Occas	172.00	M
## 108	Female	17.0	15.9	Right	R on L	85	Right	Freq	Never	NA	
## 109	Male	17.5	17.5	Right	L on R	64	Neither	Freq	Never	180.00	M
## 110	Male	19.7	20.1	Right	R on L	67	Left	Some	Regul	180.34	Imp
## 111	Female	18.5	18.5	Right	R on L	76	Left	Freq	Never	175.00	M
## 112	Male	19.2	19.6	Right	L on R	80	Right	None	Never	190.50	Imp
## 113	Female	17.2	16.7	Right	R on L	75	Right	Freq	Never	170.18	Imp
## 114	Male	20.5	21.0	Right	R on L	60	Right	Freq	Never	185.00	M
## 115	Female	16.0	15.5	Right	L on R	60	Left	Freq	Never	162.56	Imp
## 116	Female	16.9	16.0	Right	L on R	70	Right	None	Never	158.00	M
## 117	Female	17.0	16.7	Right	R on L	70	Right	Some	Never	159.00	M
## 118	Male	23.0	22.0	Left	L on R	83	Left	Some	Heavy	193.04	Imp
## 119	Female	18.5	18.0	Left	L on R	100	Neither	Some	Never	171.00	M
## 120	Male	21.0	20.4	Right	L on R	100	Right	Freq	Heavy	184.00	M
## 121	Male	20.0	20.0	Right	R on L	80	Neither	Freq	Occas	NA	
## 122	Male	22.5	22.5	Right	L on R	76	Right	Freq	Occas	177.00	M
## 123	Female	18.5	18.0	Right	R on L	92	Right	Freq	Never	172.00	M

## 124	Male	19.8	20.0	Left	L on R	59	Right	Freq	Never	180.00	M
## 125	Male	18.5	18.1	Right	L on R	66	Left	Freq	Never	175.26	Imp
## 126	Male	19.3	19.4	Right	R on L	NA	Right	Freq	Never	180.34	Imp
## 127	Female	16.0	16.0	Right	R on L	68	Right	Freq	Never	172.72	Imp
## 128	Male	18.8	19.1	Right	L on R	66	Neither	Freq	Regul	178.50	M
## 129	Female	17.5	17.0	Right	R on L	74	Right	Freq	Never	157.00	M
## 130	Female	16.4	16.5	Right	L on R	90	Right	Some	Never	152.00	M
## 131	Male	22.0	21.5	Right	R on L	86	Right	Freq	Never	187.96	Imp
## 132	Male	19.0	19.5	Right	L on R	60	Right	Some	Never	178.00	M
## 133	Female	18.9	20.0	Right	R on L	86	Right	Some	Never	NA	
## 134	Female	15.4	16.4	Left	L on R	80	Left	Freq	Occas	160.02	Imp
## 135	Male	17.9	17.8	Right	R on L	85	Left	Some	Never	175.26	Imp
## 136	Male	23.1	22.5	Right	L on R	90	Right	Some	Regul	189.00	M
## 137	<NA>	19.8	19.0	Left	L on R	73	Neither	Freq	Never	172.00	M
## 138	Male	22.0	22.0	Right	L on R	72	Right	Freq	Never	182.88	Imp
## 139	Male	20.0	19.5	Right	L on R	NA	Right	Freq	Never	170.00	M
## 140	Female	19.5	18.5	Right	L on R	68	Right	None	Never	167.00	M
## 141	Female	18.0	18.6	Right	R on L	84	Right	Some	Never	175.00	M
## 142	Female	18.3	19.0	Right	R on L	NA	Right	None	Never	165.00	M
## 143	Female	19.0	18.8	Right	R on L	65	Right	Freq	Never	172.72	Imp
## 144	Male	21.4	21.0	Right	L on R	96	Neither	Some	Never	180.00	M
## 145	Female	20.0	19.5	Left	R on L	68	Neither	Freq	Never	172.00	M
## 146	Male	18.5	18.5	Right	R on L	75	Neither	Some	Never	185.00	M
## 147	Male	22.5	22.6	Right	L on R	64	Right	Freq	Regul	187.96	Imp
## 148	Male	19.5	20.2	Right	R on L	60	Neither	Freq	Never	185.42	Imp



etnic	Female	18.0	18.0	Right	L on R	92	Neither	Freq	Never	165.00	M
etnic	Female	18.0	18.5	Right	R on L	64	Neither	Freq	Never	164.00	M
etnic	Male	21.8	22.3	Right	R on L	76	Left	Freq	Never	195.00	M
etnic	Female	13.0	12.5	Right	L on R	80	Right	Freq	Never	165.00	M
erial	Female	16.3	16.2	Right	L on R	92	Right	Some	Regul	152.40	Imp
erial	Male	21.5	21.6	Right	R on L	69	Right	Freq	Never	172.72	Imp
erial	Male	18.9	19.1	Right	L on R	68	Right	None	Never	180.34	Imp
etnic	Male	20.5	20.0	Right	R on L	76	Right	Freq	Never	173.00	M
<NA>	Male	14.0	15.5	Right	L on R	NA	Neither	Freq	Heavy	NA	
erial	Female	18.9	19.2	Right	L on R	74	Right	Some	Never	167.64	Imp
erial	Male	20.0	20.5	Right	R on L	NA	Right	None	Never	187.96	Imp
etnic	Male	18.5	19.0	Right	L on R	84	Right	Freq	Regul	187.00	M
etnic	Female	17.5	17.1	Right	R on L	80	Left	None	Never	167.00	M
etnic	Male	18.1	18.2	Left	Neither	NA	Right	Some	Never	168.00	M
erial	Male	20.2	20.3	Right	L on R	72	Neither	Some	Never	191.80	Imp
etnic	Female	16.5	16.9	Right	R on L	60	Neither	Freq	Occas	169.20	M
etnic	Male	19.1	19.1	Right	Neither	NA	Right	Some	Never	177.00	M
etnic	Female	17.6	17.2	Right	R on L	81	Left	Some	Never	168.00	M
etnic	Female	19.5	19.2	Right	R on L	70	Right	Some	Never	170.00	M
erial	Female	16.5	15.0	Right	L on R	65	Right	Some	Regul	160.02	Imp
etnic	Male	19.0	18.5	Right	L on R	NA	Neither	Freq	Never	189.00	M
erial	Male	19.0	18.5	Right	R on L	72	Right	Freq	Never	180.34	Imp
etnic	Female	16.5	17.0	Right	L on R	NA	Right	Some	Never	168.00	M
erial	Male	20.5	19.5	Left	L on R	80	Right	Some	Occas	182.88	Imp
<NA>	Female	15.5	15.5	Right	Neither	50	Right	Some	Regul	NA	

## 174	Female	18.0	17.5	Right	R on L	48	Neither	Freq	Never	165.00	M
## 175	Female	17.5	18.0	Right	R on L	68	Neither	Freq	Never	157.48	Imp
## 176	Female	19.0	18.5	Left	L on R	104	Left	Freq	Never	170.00	M
## 177	Male	20.5	20.5	Right	Neither	76	Right	Freq	Regul	172.72	Imp
## 178	Female	16.7	17.0	Right	L on R	84	Left	Freq	Never	164.00	M
## 179	Female	20.5	20.5	Right	R on L	NA	Left	Freq	Regul	NA	
## 180	Female	17.0	16.5	Right	R on L	70	Right	Some	Never	162.56	Imp
## 181	Male	19.0	19.5	Right	R on L	68	Right	Freq	Occas	172.00	M
## 182	Female	14.0	13.5	Right	R on L	87	Neither	Freq	Occas	165.10	Imp
## 183	Female	17.5	17.6	Right	L on R	79	Right	Some	Never	162.50	M
## 184	Male	18.5	19.0	Right	L on R	70	Left	Freq	Never	170.00	M
## 185	Male	18.0	18.5	Right	Neither	90	Right	Some	Never	175.00	M
## 186	Male	20.5	20.7	Right	R on L	72	Right	Some	Never	168.00	M
## 187	Female	17.0	17.0	Right	L on R	79	Right	Some	Never	163.00	M
## 188	Male	18.5	18.5	Right	R on L	65	Right	None	Never	165.00	M
## 189	Male	18.0	18.5	Right	R on L	62	Right	Freq	Never	173.00	M
## 190	Male	18.5	18.0	Right	Neither	63	Neither	Freq	Never	196.00	M
## 191	Male	20.0	19.5	Right	R on L	92	Right	Some	Never	179.10	Imp
## 192	Male	22.0	22.5	Right	L on R	60	Right	Some	Never	180.00	M
## 193	Male	17.9	18.4	Right	R on L	68	Left	None	Occas	176.00	M
## 194	Female	17.6	17.8	Right	L on R	72	Left	Some	Never	160.02	Imp
## 195	Female	16.7	15.1	Right	Neither	NA	Right	None	Never	157.48	Imp
## 196	Female	17.0	17.6	Right	L on R	76	Right	Some	Never	165.00	M
## 197	Female	15.0	13.0	Right	R on L	80	Neither	Freq	Never	170.18	Imp
## 198	Male	16.0	15.5	Right	Neither	71	Right	Freq	Never	154.94	Imp

etnic	199	Female	19.1	19.0	Right	R on L	80	Right	Some	Occas	170.00	M
etnic	200	Female	17.5	16.5	Right	R on L	80	Neither	Some	Never	164.00	M
etnic	201	Female	16.2	15.8	Right	R on L	61	Right	Some	Occas	167.00	M
etnic	202	Male	21.0	21.0	Right	L on R	48	Neither	Freq	Never	174.00	M
<NA>	203	Female	18.8	17.8	Right	R on L	76	Right	Some	Never	NA	
etnic	204	Female	18.5	18.0	Right	Neither	86	Right	None	Never	160.00	M
etnic	205	Male	17.0	17.5	Right	R on L	80	Right	Some	Regul	179.10	M
etnic	206	Female	17.5	17.0	Right	R on L	83	Neither	Freq	Occas	168.00	M
etnic	207	Female	17.5	17.6	Right	L on R	76	Right	Some	Never	153.50	M
etnic	208	Male	17.5	17.6	Right	R on L	84	Right	Some	Never	160.00	M
etnic	209	Male	17.5	17.0	Left	L on R	97	Neither	None	Never	165.00	M
etnic	210	Female	20.8	20.7	Right	R on L	NA	Neither	Freq	Never	171.50	M
etnic	211	Female	18.6	18.6	Right	L on R	74	Right	Some	Never	160.00	M
etnic	212	Female	17.5	17.5	Left	R on L	83	Neither	Some	Never	163.00	M
<NA>	213	Male	18.0	18.5	Right	R on L	78	Right	Freq	Never	NA	
etnic	214	Male	17.0	17.5	Right	R on L	65	Right	Some	Never	165.00	M
erial	215	Female	18.0	17.8	Right	L on R	68	Right	Some	Never	168.90	Imp
etnic	216	Male	19.5	20.0	Right	Neither	NA	Right	Some	Never	170.00	M
<NA>	217	Female	16.3	16.2	Right	L on R	NA	Right	None	Never	NA	
etnic	218	Male	18.2	19.8	Right	R on L	88	Right	Freq	Never	185.00	M
etnic	219	Female	17.0	17.3	Right	L on R	NA	Neither	Freq	Never	173.00	M
etnic	220	Male	23.2	23.2	Right	L on R	75	Right	Freq	Never	188.00	M
etnic	221	Male	23.2	23.3	Right	L on R	NA	Right	None	Heavy	171.00	M
erial	222	Female	15.9	16.5	Right	R on L	70	Right	Freq	Never	167.64	Imp
erial	223	Female	17.5	18.4	Right	R on L	88	Right	Some	Never	162.56	Imp

[illegible]

##	22	18.167
##	23	17.833
##	24	18.250
##	25	19.167
##	26	17.583
##	27	17.500
##	28	18.083
##	29	21.917
##	30	19.250
##	31	41.583
##	32	17.500
##	33	39.750
##	34	17.167
##	35	17.750
##	36	18.000
##	37	19.000
##	38	17.917
##	39	35.500
##	40	19.917
##	41	17.500
##	42	17.083
##	43	28.583
##	44	17.500
##	45	17.417
##	46	18.500
##	47	18.917
##	48	19.417
##	49	18.417
##	50	30.750
##	51	18.500
##	52	17.500
##	53	18.333
##	54	17.417
##	55	20.000
##	56	18.333
##	57	17.167
##	58	17.417
##	59	17.667
##	60	18.417
##	61	20.333
##	62	17.333
##	63	17.500
##	64	19.833
##	65	18.583
##	66	18.000
##	67	30.667
##	68	16.917
##	69	19.917
##	70	18.333
##	71	17.583

## 72 17.833  
## 73 17.667  
## 74 17.417  
## 75 17.750  
## 76 20.667  
## 77 23.583  
## 78 17.167  
## 79 17.083  
## 80 18.750  
## 81 16.750  
## 82 20.167  
## 83 17.667  
## 84 17.167  
## 85 17.167  
## 86 17.250  
## 87 18.000  
## 88 18.750  
## 89 21.583  
## 90 17.583  
## 91 19.667  
## 92 18.000  
## 93 19.667  
## 94 17.083  
## 95 22.833  
## 96 17.083  
## 97 19.417  
## 98 23.250  
## 99 18.083  
## 100 19.083  
## 101 18.917  
## 102 17.750  
## 103 20.833  
## 104 20.167  
## 105 17.667  
## 106 18.250  
## 107 17.000  
## 108 18.500  
## 109 18.583  
## 110 17.750  
## 111 24.167  
## 112 18.167  
## 113 21.167  
## 114 17.917  
## 115 17.417  
## 116 20.500  
## 117 22.917  
## 118 18.917  
## 119 18.917  
## 120 20.083  
## 121 17.500

## 122 18.250  
## 123 17.500  
## 124 17.417  
## 125 21.000  
## 126 19.833  
## 127 17.667  
## 128 18.083  
## 129 18.000  
## 130 18.333  
## 131 20.000  
## 132 18.750  
## 133 19.083  
## 134 18.500  
## 135 18.417  
## 136 19.167  
## 137 21.500  
## 138 19.333  
## 139 21.417  
## 140 18.667  
## 141 17.500  
## 142 21.083  
## 143 17.250  
## 144 19.000  
## 145 19.167  
## 146 19.000  
## 147 23.000  
## 148 32.667  
## 149 20.000  
## 150 20.167  
## 151 25.500  
## 152 18.167  
## 153 23.500  
## 154 70.417  
## 155 43.833  
## 156 23.583  
## 157 21.083  
## 158 44.250  
## 159 19.667  
## 160 17.917  
## 161 18.417  
## 162 21.167  
## 163 17.500  
## 164 29.083  
## 165 19.917  
## 166 18.500  
## 167 18.167  
## 168 32.750  
## 169 17.417  
## 170 17.333  
## 171 73.000

## 172 18.667  
## 173 18.500  
## 174 18.667  
## 175 17.750  
## 176 17.250  
## 177 36.583  
## 178 23.083  
## 179 19.250  
## 180 17.167  
## 181 23.417  
## 182 17.083  
## 183 17.250  
## 184 23.833  
## 185 18.750  
## 186 21.167  
## 187 24.667  
## 188 18.500  
## 189 20.333  
## 190 20.083  
## 191 18.917  
## 192 27.333  
## 193 18.917  
## 194 17.250  
## 195 18.167  
## 196 26.500  
## 197 17.000  
## 198 17.167  
## 199 19.167  
## 200 17.500  
## 201 19.250  
## 202 21.333  
## 203 18.583  
## 204 20.167  
## 205 18.667  
## 206 17.083  
## 207 17.417  
## 208 18.583  
## 209 19.500  
## 210 18.500  
## 211 17.167  
## 212 17.250  
## 213 17.500  
## 214 20.417  
## 215 17.083  
## 216 21.250  
## 217 19.250  
## 218 19.333  
## 219 19.167  
## 220 18.917  
## 221 20.917



```
## 222 17.333
## 223 18.167
## 224 20.750
## 225 19.917
## 226 18.667
## 227 18.417
## 228 17.417
## 229 20.333
## 230 19.333
## 231 18.167
## 232 20.750
## 233 17.667
## 234 16.917
## 235 18.583
## 236 17.167
## 237 17.750
```

```
cleansurvey=survey[complete.cases(survey),]  
print(cleansurvey)
```

##	Sex	Wr.Hnd	NW.Hnd	W.Hnd	Fold	Pulse	Clap	Exer	Smoke	Height	
## 1	Female	18.5	18.0	Right	R on L	92	Left	Some	Never	173.00	M
## 2	Male	19.5	20.5	Left	R on L	104	Left	None	Regul	177.80	Imp
## 5	Male	20.0	20.0	Right	Neither	35	Right	Some	Never	165.00	M
## 6	Female	18.0	17.7	Right	L on R	64	Right	Some	Never	172.72	Imp
## 7	Male	17.7	17.7	Right	L on R	83	Right	Freq	Never	182.88	Imp
## 8	Female	17.0	17.3	Right	R on L	74	Right	Freq	Never	157.00	M
## 9	Male	20.0	19.5	Right	R on L	72	Right	Some	Never	175.00	M
## 10	Male	18.5	18.5	Right	R on L	90	Right	Some	Never	167.00	M
## 11	Female	17.0	17.2	Right	L on R	80	Right	Freq	Never	156.20	Imp
## 14	Female	19.5	20.2	Right	L on R	66	Neither	Some	Never	155.00	M
## 17	Female	18.0	18.0	Right	L on R	89	Neither	Freq	Never	157.00	M
## 18	Male	19.4	19.2	Left	R on L	74	Right	Some	Never	182.88	Imp
## 20	Male	21.0	20.9	Right	R on L	78	Right	Freq	Never	177.00	M
## 21	Male	21.5	22.0	Right	R on L	72	Left	Freq	Never	190.50	Imp

## 22 erial	Male	20.1	20.7	Right	L on R	72	Right	Freq	Never	180.34	Imp
## 23 erial	Male	18.5	18.0	Right	L on R	64	Right	Freq	Never	180.34	Imp
## 24 etric	Male	21.5	21.2	Right	R on L	62	Right	Some	Never	184.00	M
## 27 erial	Male	21.0	20.7	Right	R on L	90	Right	Some	Never	172.72	Imp
## 28 erial	Male	20.8	21.4	Right	R on L	62	Neither	Freq	Never	175.26	Imp
## 30 etric	Male	19.5	19.5	Right	L on R	79	Right	Some	Never	167.00	M
## 32 etric	Male	18.8	18.2	Right	L on R	78	Right	Freq	Never	180.00	M
## 33 erial	Female	17.1	17.5	Right	R on L	72	Right	Freq	Heavy	166.40	Imp
## 34 etric	Male	20.1	20.0	Right	R on L	70	Right	Some	Never	180.00	M
## 36 etric	Male	22.2	21.0	Right	L on R	66	Right	Freq	Occas	190.00	M
## 38 etric	Male	19.4	18.5	Right	R on L	72	Neither	Freq	Never	182.50	M
## 39 etric	Male	22.0	22.0	Right	R on L	80	Right	Some	Never	185.00	M
## 42 erial	Female	17.8	18.0	Right	R on L	72	Right	Some	Never	154.94	Imp
## 44 erial	Female	20.1	20.2	Right	L on R	80	Right	Some	Never	176.50	Imp
## 47 etric	Male	23.2	22.7	Right	L on R	84	Left	Freq	Regul	180.00	M
## 48 etric	Male	22.5	23.0	Right	R on L	96	Right	None	Never	170.00	M
## 49 etric	Female	18.0	17.6	Right	R on L	60	Right	Some	Occas	168.00	M
## 50 etric	Female	18.0	17.9	Right	R on L	50	Left	None	Never	165.00	M
## 51 etric	Male	22.0	21.5	Left	R on L	55	Left	Freq	Never	200.00	M
## 52 etric	Male	20.5	20.0	Right	L on R	68	Right	Freq	Never	190.00	M
## 53 erial	Male	17.0	18.0	Right	L on R	78	Left	Some	Never	170.18	Imp
## 54 etric	Male	20.5	19.5	Right	L on R	56	Right	Freq	Never	179.00	M
## 55 etric	Male	22.5	22.5	Right	R on L	65	Right	Freq	Regul	182.00	M
## 57 erial	Female	15.5	15.4	Right	R on L	70	Neither	None	Never	157.48	Imp
## 59 erial	Male	19.5	19.0	Right	L on R	62	Right	Freq	Never	177.80	Imp

## 61 etric	Male	22.8	23.2	Right	R on L	66	Neither	Freq	Never	187.00	M
## 62 erial	Female	18.5	18.2	Right	R on L	72	Neither	Freq	Never	167.64	Imp
## 63 etric	Female	19.6	19.7	Right	L on R	70	Right	Freq	Never	178.00	M
## 65 etric	Female	17.3	18.0	Right	L on R	64	Neither	Freq	Never	164.00	M
## 71 etric	Female	18.0	17.5	Right	L on R	64	Left	Freq	Never	170.00	M
## 73 etric	Female	17.0	16.6	Right	R on L	68	Right	Some	Never	171.00	M
## 74 erial	Female	16.5	17.0	Right	L on R	40	Left	Freq	Never	167.64	Imp
## 75 etric	Female	15.6	15.8	Right	R on L	88	Left	Some	Never	165.00	M
## 76 etric	Female	17.5	17.5	Right	Neither	68	Right	Freq	Heavy	170.00	M
## 77 etric	Female	17.0	17.6	Right	L on R	76	Right	Some	Never	165.00	M
## 79 erial	Female	18.3	18.5	Right	R on L	68	Neither	Some	Never	165.10	Imp
## 82 erial	Male	19.2	18.9	Right	R on L	76	Right	Freq	Never	176.50	Imp
## 85 erial	Male	23.0	23.5	Right	L on R	90	Right	Freq	Never	167.64	Imp
## 86 etric	Female	17.7	17.0	Right	R on L	76	Right	Some	Never	167.00	M
## 87 erial	Female	18.2	18.0	Right	L on R	70	Right	Some	Never	162.56	Imp
## 88 etric	Female	18.3	18.5	Right	R on L	75	Left	Freq	Never	170.00	M
## 89 etric	Male	18.0	18.0	Right	Neither	60	Right	Freq	Never	179.00	M
## 91 etric	Male	20.5	20.0	Right	R on L	75	Left	Some	Never	183.00	M
## 93 etric	Female	18.2	17.5	Right	L on R	70	Right	Some	Never	165.00	M
## 95 etric	Male	21.3	20.8	Right	R on L	65	Right	Freq	Heavy	179.00	M
## 97 etric	Male	20.0	19.5	Right	R on L	68	Neither	Freq	Regul	190.00	M
## 98 etric	Female	17.5	17.5	Right	R on L	60	Right	Freq	Never	166.50	M
## 100 erial	Female	19.4	19.6	Right	R on L	68	Neither	Freq	Never	175.26	Imp
## 102 etric	Male	18.9	19.1	Right	L on R	60	Neither	None	Never	170.00	M
## 104 etric	Female	17.5	17.3	Right	R on L	72	Right	Freq	Never	175.00	M

## 105	Female	17.5	17.0	Right	R on L	80	Left	Some	Heavy	163.00	M
## 106	Female	19.5	18.5	Right	R on L	80	Right	Some	Never	170.00	M
## 109	Male	17.5	17.5	Right	L on R	64	Neither	Freq	Never	180.00	M
## 110	Male	19.7	20.1	Right	R on L	67	Left	Some	Regul	180.34	Imp
## 111	Female	18.5	18.5	Right	R on L	76	Left	Freq	Never	175.00	M
## 112	Male	19.2	19.6	Right	L on R	80	Right	None	Never	190.50	Imp
## 113	Female	17.2	16.7	Right	R on L	75	Right	Freq	Never	170.18	Imp
## 114	Male	20.5	21.0	Right	R on L	60	Right	Freq	Never	185.00	M
## 115	Female	16.0	15.5	Right	L on R	60	Left	Freq	Never	162.56	Imp
## 116	Female	16.9	16.0	Right	L on R	70	Right	None	Never	158.00	M
## 117	Female	17.0	16.7	Right	R on L	70	Right	Some	Never	159.00	M
## 118	Male	23.0	22.0	Left	L on R	83	Left	Some	Heavy	193.04	Imp
## 119	Female	18.5	18.0	Left	L on R	100	Neither	Some	Never	171.00	M
## 120	Male	21.0	20.4	Right	L on R	100	Right	Freq	Heavy	184.00	M
## 122	Male	22.5	22.5	Right	L on R	76	Right	Freq	Occas	177.00	M
## 123	Female	18.5	18.0	Right	R on L	92	Right	Freq	Never	172.00	M
## 124	Male	19.8	20.0	Left	L on R	59	Right	Freq	Never	180.00	M
## 125	Male	18.5	18.1	Right	L on R	66	Left	Freq	Never	175.26	Imp
## 127	Female	16.0	16.0	Right	R on L	68	Right	Freq	Never	172.72	Imp
## 128	Male	18.8	19.1	Right	L on R	66	Neither	Freq	Regul	178.50	M
## 129	Female	17.5	17.0	Right	R on L	74	Right	Freq	Never	157.00	M
## 130	Female	16.4	16.5	Right	L on R	90	Right	Some	Never	152.00	M
## 131	Male	22.0	21.5	Right	R on L	86	Right	Freq	Never	187.96	Imp
## 132	Male	19.0	19.5	Right	L on R	60	Right	Some	Never	178.00	M
## 134	Female	15.4	16.4	Left	L on R	80	Left	Freq	Occas	160.02	Imp

## 135	Male	17.9	17.8	Right	R on L	85	Left	Some	Never	175.26	Imp
## 136	Male	23.1	22.5	Right	L on R	90	Right	Some	Regul	189.00	M
## 138	Male	22.0	22.0	Right	L on R	72	Right	Freq	Never	182.88	Imp
## 140	Female	19.5	18.5	Right	L on R	68	Right	None	Never	167.00	M
## 141	Female	18.0	18.6	Right	R on L	84	Right	Some	Never	175.00	M
## 143	Female	19.0	18.8	Right	R on L	65	Right	Freq	Never	172.72	Imp
## 144	Male	21.4	21.0	Right	L on R	96	Neither	Some	Never	180.00	M
## 145	Female	20.0	19.5	Left	R on L	68	Neither	Freq	Never	172.00	M
## 146	Male	18.5	18.5	Right	R on L	75	Neither	Some	Never	185.00	M
## 147	Male	22.5	22.6	Right	L on R	64	Right	Freq	Regul	187.96	Imp
## 148	Male	19.5	20.2	Right	R on L	60	Neither	Freq	Never	185.42	Imp
## 149	Female	18.0	18.0	Right	L on R	92	Neither	Freq	Never	165.00	M
## 150	Female	18.0	18.5	Right	R on L	64	Neither	Freq	Never	164.00	M
## 151	Male	21.8	22.3	Right	R on L	76	Left	Freq	Never	195.00	M
## 152	Female	13.0	12.5	Right	L on R	80	Right	Freq	Never	165.00	M
## 153	Female	16.3	16.2	Right	L on R	92	Right	Some	Regul	152.40	Imp
## 154	Male	21.5	21.6	Right	R on L	69	Right	Freq	Never	172.72	Imp
## 155	Male	18.9	19.1	Right	L on R	68	Right	None	Never	180.34	Imp
## 156	Male	20.5	20.0	Right	R on L	76	Right	Freq	Never	173.00	M
## 158	Female	18.9	19.2	Right	L on R	74	Right	Some	Never	167.64	Imp
## 160	Male	18.5	19.0	Right	L on R	84	Right	Freq	Regul	187.00	M
## 161	Female	17.5	17.1	Right	R on L	80	Left	None	Never	167.00	M
## 163	Male	20.2	20.3	Right	L on R	72	Neither	Some	Never	191.80	Imp
## 164	Female	16.5	16.9	Right	R on L	60	Neither	Freq	Occas	169.20	M
## 166	Female	17.6	17.2	Right	R on L	81	Left	Some	Never	168.00	M

## 167	Female	19.5	19.2	Right	R on L	70	Right	Some	Never	170.00	M
## 168	Female	16.5	15.0	Right	L on R	65	Right	Some	Regul	160.02	Imp
## 170	Male	19.0	18.5	Right	R on L	72	Right	Freq	Never	180.34	Imp
## 172	Male	20.5	19.5	Left	L on R	80	Right	Some	Occas	182.88	Imp
## 174	Female	18.0	17.5	Right	R on L	48	Neither	Freq	Never	165.00	M
## 175	Female	17.5	18.0	Right	R on L	68	Neither	Freq	Never	157.48	Imp
## 176	Female	19.0	18.5	Left	L on R	104	Left	Freq	Never	170.00	M
## 177	Male	20.5	20.5	Right	Neither	76	Right	Freq	Regul	172.72	Imp
## 178	Female	16.7	17.0	Right	L on R	84	Left	Freq	Never	164.00	M
## 180	Female	17.0	16.5	Right	R on L	70	Right	Some	Never	162.56	Imp
## 181	Male	19.0	19.5	Right	R on L	68	Right	Freq	Occas	172.00	M
## 182	Female	14.0	13.5	Right	R on L	87	Neither	Freq	Occas	165.10	Imp
## 183	Female	17.5	17.6	Right	L on R	79	Right	Some	Never	162.50	M
## 184	Male	18.5	19.0	Right	L on R	70	Left	Freq	Never	170.00	M
## 185	Male	18.0	18.5	Right	Neither	90	Right	Some	Never	175.00	M
## 186	Male	20.5	20.7	Right	R on L	72	Right	Some	Never	168.00	M
## 187	Female	17.0	17.0	Right	L on R	79	Right	Some	Never	163.00	M
## 188	Male	18.5	18.5	Right	R on L	65	Right	None	Never	165.00	M
## 189	Male	18.0	18.5	Right	R on L	62	Right	Freq	Never	173.00	M
## 190	Male	18.5	18.0	Right	Neither	63	Neither	Freq	Never	196.00	M
## 191	Male	20.0	19.5	Right	R on L	92	Right	Some	Never	179.10	Imp
## 192	Male	22.0	22.5	Right	L on R	60	Right	Some	Never	180.00	M
## 193	Male	17.9	18.4	Right	R on L	68	Left	None	Occas	176.00	M
## 194	Female	17.6	17.8	Right	L on R	72	Left	Some	Never	160.02	Imp
## 196	Female	17.0	17.6	Right	L on R	76	Right	Some	Never	165.00	M

## 197	Female	15.0	13.0	Right	R on L	80	Neither	Freq	Never	170.18	Imp
## 198	Male	16.0	15.5	Right	Neither	71	Right	Freq	Never	154.94	Imp
## 199	Female	19.1	19.0	Right	R on L	80	Right	Some	Occas	170.00	M
## 200	Female	17.5	16.5	Right	R on L	80	Neither	Some	Never	164.00	M
## 201	Female	16.2	15.8	Right	R on L	61	Right	Some	Occas	167.00	M
## 202	Male	21.0	21.0	Right	L on R	48	Neither	Freq	Never	174.00	M
## 204	Female	18.5	18.0	Right	Neither	86	Right	None	Never	160.00	M
## 205	Male	17.0	17.5	Right	R on L	80	Right	Some	Regul	179.10	M
## 206	Female	17.5	17.0	Right	R on L	83	Neither	Freq	Occas	168.00	M
## 207	Female	17.5	17.6	Right	L on R	76	Right	Some	Never	153.50	M
## 208	Male	17.5	17.6	Right	R on L	84	Right	Some	Never	160.00	M
## 209	Male	17.5	17.0	Left	L on R	97	Neither	None	Never	165.00	M
## 211	Female	18.6	18.6	Right	L on R	74	Right	Some	Never	160.00	M
## 212	Female	17.5	17.5	Left	R on L	83	Neither	Some	Never	163.00	M
## 214	Male	17.0	17.5	Right	R on L	65	Right	Some	Never	165.00	M
## 215	Female	18.0	17.8	Right	L on R	68	Right	Some	Never	168.90	Imp
## 218	Male	18.2	19.8	Right	R on L	88	Right	Freq	Never	185.00	M
## 220	Male	23.2	23.2	Right	L on R	75	Right	Freq	Never	188.00	M
## 222	Female	15.9	16.5	Right	R on L	70	Right	Freq	Never	167.64	Imp
## 223	Female	17.5	18.4	Right	R on L	88	Right	Some	Never	162.56	Imp
## 227	Female	18.8	18.3	Right	R on L	80	Right	Some	Heavy	170.18	Imp
## 228	Male	20.0	19.8	Right	L on R	68	Right	Freq	Never	185.00	M
## 229	Female	18.6	18.8	Right	L on R	70	Right	Freq	Regul	167.00	M
## 230	Male	18.6	19.6	Right	L on R	71	Right	Freq	Occas	185.00	M
## 231	Female	18.8	18.5	Right	R on L	80	Right	Some	Never	169.00	M

[illegible]



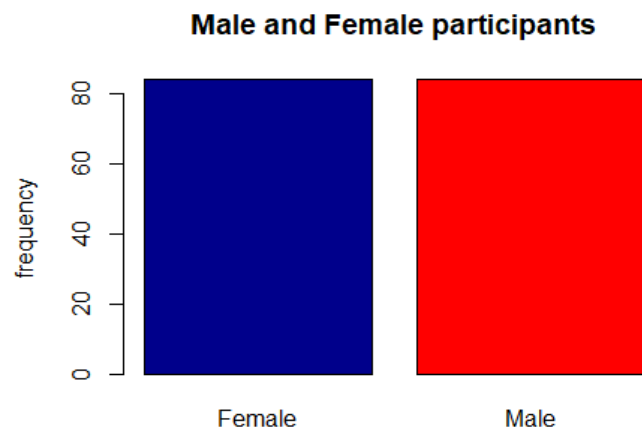
## 63 17.500  
## 65 18.583  
## 71 17.583  
## 73 17.667  
## 74 17.417  
## 75 17.750  
## 76 20.667  
## 77 23.583  
## 79 17.083  
## 82 20.167  
## 85 17.167  
## 86 17.250  
## 87 18.000  
## 88 18.750  
## 89 21.583  
## 91 19.667  
## 93 19.667  
## 95 22.833  
## 97 19.417  
## 98 23.250  
## 100 19.083  
## 102 17.750  
## 104 20.167  
## 105 17.667  
## 106 18.250  
## 109 18.583  
## 110 17.750  
## 111 24.167  
## 112 18.167  
## 113 21.167  
## 114 17.917  
## 115 17.417  
## 116 20.500  
## 117 22.917  
## 118 18.917  
## 119 18.917  
## 120 20.083  
## 122 18.250  
## 123 17.500  
## 124 17.417  
## 125 21.000  
## 127 17.667  
## 128 18.083  
## 129 18.000  
## 130 18.333  
## 131 20.000  
## 132 18.750  
## 134 18.500  
## 135 18.417  
## 136 19.167

## 138 19.333  
## 140 18.667  
## 141 17.500  
## 143 17.250  
## 144 19.000  
## 145 19.167  
## 146 19.000  
## 147 23.000  
## 148 32.667  
## 149 20.000  
## 150 20.167  
## 151 25.500  
## 152 18.167  
## 153 23.500  
## 154 70.417  
## 155 43.833  
## 156 23.583  
## 158 44.250  
## 160 17.917  
## 161 18.417  
## 163 17.500  
## 164 29.083  
## 166 18.500  
## 167 18.167  
## 168 32.750  
## 170 17.333  
## 172 18.667  
## 174 18.667  
## 175 17.750  
## 176 17.250  
## 177 36.583  
## 178 23.083  
## 180 17.167  
## 181 23.417  
## 182 17.083  
## 183 17.250  
## 184 23.833  
## 185 18.750  
## 186 21.167  
## 187 24.667  
## 188 18.500  
## 189 20.333  
## 190 20.083  
## 191 18.917  
## 192 27.333  
## 193 18.917  
## 194 17.250  
## 196 26.500  
## 197 17.000  
## 198 17.167

```
## 199 19.167
## 200 17.500
## 201 19.250
## 202 21.333
## 204 20.167
## 205 18.667
## 206 17.083
## 207 17.417
## 208 18.583
## 209 19.500
## 211 17.167
## 212 17.250
## 214 20.417
## 215 17.083
## 218 19.333
## 220 18.917
## 222 17.333
## 223 18.167
## 227 18.417
## 228 17.417
## 229 20.333
## 230 19.333
## 231 18.167
## 233 17.667
## 234 16.917
## 236 17.167
## 237 17.750
```

1. Plot a bar graph for the number of male and female participants in the survey. Provide the title as “Male and Female participants”, y-axis label as “frequency” and specify the colours for the bars.

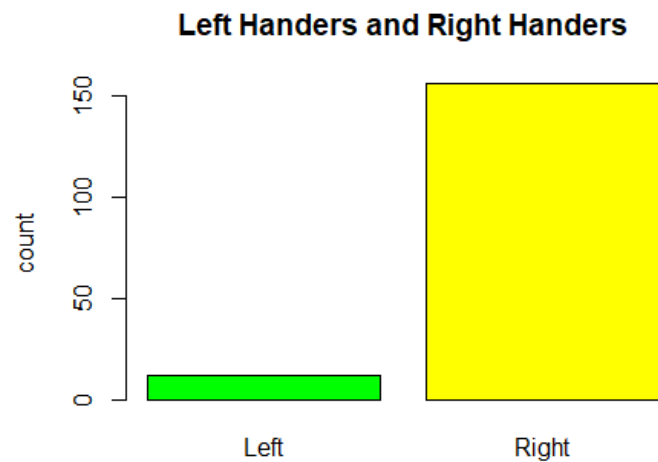
```
#1
participants <- table(cleansurvey$Sex)
barplot(participants, main="Male and Female participants", ylab = "frequency"
,col=c("darkblue","red") )
```



the colours for the bars.

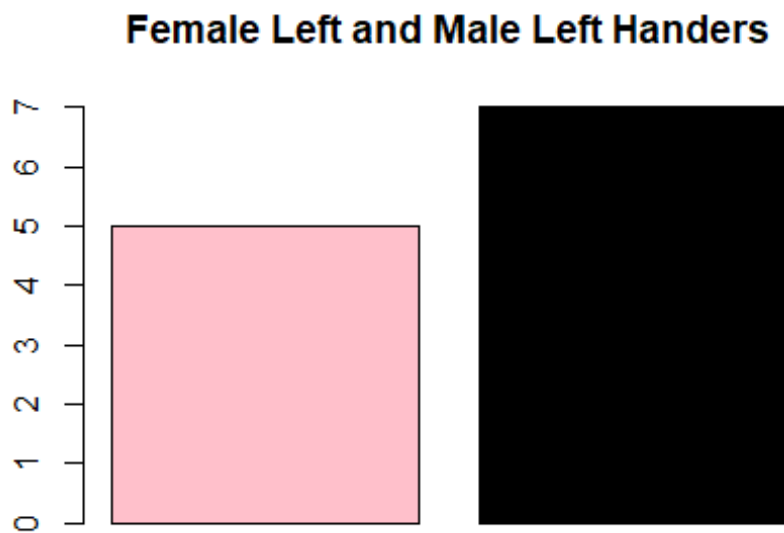
- Plot a bar graph for the number of left handers and right handers in the survey. Provide the title as “Left Handers and Right Handers”, y-axis label as “count” and specify the colours for the bars.

```
#2
count <- table(cleansurvey$W.Hnd)
barplot(count, main="Left Handers and Right Handers", ylab = "count", col=c("green","yellow"))
```



3. Plot the distribution between male left handers and female left handers using bar chart. Provide the title as “Female Left Handers and Male Left Handers”, y-axis label as “count” and specify the colours for the bars.

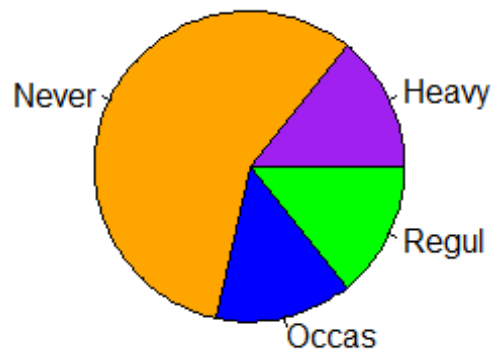
```
#3
x=filter(cleansurvey,cleansurvey$Sex=="Female")
y=filter(cleansurvey,cleansurvey$Sex=="Male")
x=c(sum(x$W.Hnd=="Left"),sum(y$W.Hnd=="Left"))
barplot(x,main="Female Left and Male Left Handers",col=c("pink","black"))
```



4. Draw the distribution of smoking habits of male left handers using pie chart.

```
#4
y=filter(cleansurvey, cleansurvey$Sex=="Male")
y=filter(y,W.Hnd=="Left")
pie(table(y$Smoke),col = c("purple","orange","blue","green"),main="Smoking Habits")
```

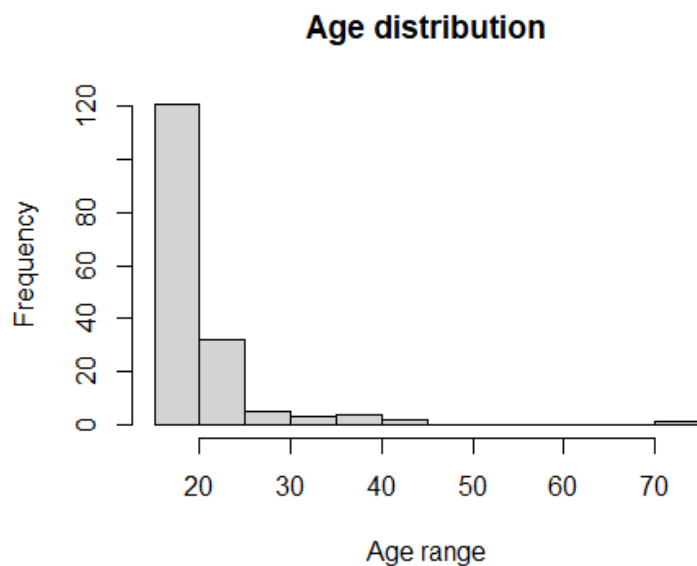
### Smoking Habits



5. Draw the histogram of age distribution with the title as 'Age distribution' and xlabel as 'Age range' and ylabel as 'frequency'.

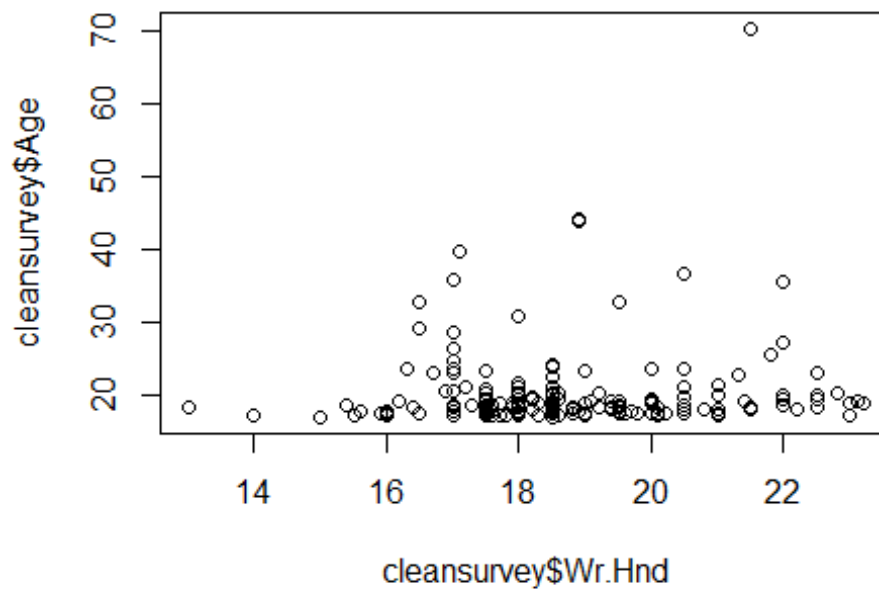
#5

```
hist(cleansurvey$Age,main="Age distribution",xlab="Age range",ylab="Frequency")
```



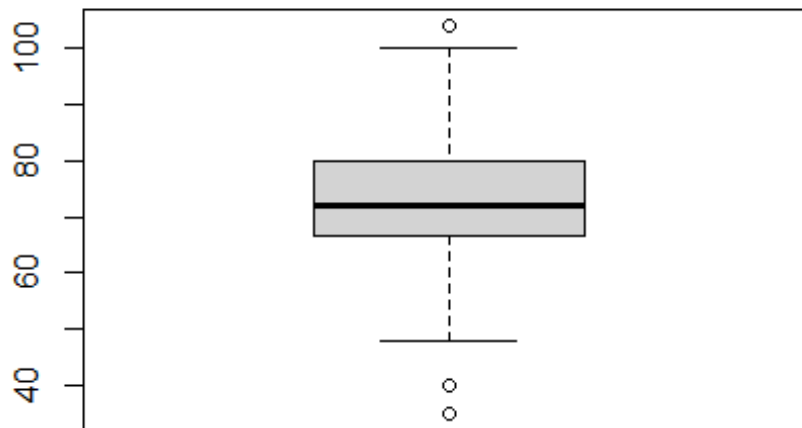
6. Reveal the relationship between the age and writing hand span using scatter plot.

```
#6  
plot(cleansurvey$Wr.Hnd, cleansurvey$Age)
```



7. Draw the boxplot for pulse rate to analyse the five summary statistics. Provide appropriate title and label.

```
#7  
boxplot(cleansurvey$Pulse)
```



```
mean(cleansurvey$Pulse)
```

```
## [1] 74.02381
```

```
sd(cleansurvey$Pulse)
```

```
## [1] 11.53747
```

```
summary(cleansurvey$Pulse)
```

```
##      Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##      35.00  66.75   72.00   74.02  80.00  104.00
```



## Part-C

### Data Manipulation using dplyr package

Use the newsurvey data obtained by cleaning 'na' values in survey data of MASS package to do the following:

1. Install the dplyr package and import it.
2. Filter all male left handers.
3. Display all female right handers who keep right on top while clapping.
4. Display all students who never exercise.
5. Display only the gender, age and writing hand of the students.

Note: use dplyr::select while using select operator as dplyr package conflicts with MASS package

#####-----P A R T - C -----#####

#1

```
library(dplyr)
```

#2

```
y=filter(cleansurvey,cleansurvey$Sex=="Male" & cleansurvey$W.Hnd=="Left")
print(y)
```

```
##      Sex Wr.Hnd NW.Hnd W.Hnd  Fold Pulse      Clap Exer Smoke Height      M.I
## 1 Male   19.5   20.5  Left R on L   104   Left None Regul 177.80 Imperial
## 2 Male   19.4   19.2  Left R on L    74   Right Some Never 182.88 Imperial
## 3 Male   22.0   21.5  Left R on L    55   Left Freq Never 200.00  Metric
## 4 Male   23.0   22.0  Left L on R    83   Left Some Heavy 193.04 Imperial
## 5 Male   19.8   20.0  Left L on R    59   Right Freq Never 180.00  Metric
## 6 Male   20.5   19.5  Left L on R    80   Right Some Occas 182.88 Imperial
## 7 Male   17.5   17.0  Left L on R    97  Neither None Never 165.00  Metric
##      Age
## 1 17.583
## 2 18.333
## 3 18.500
## 4 18.917
## 5 17.417
## 6 18.667
## 7 19.500
```

#3

```
y=filter(cleansurvey,cleansurvey$Sex=="Female" & cleansurvey$Clap=="Right")
print(y)
```

		Sex	Wr.Hnd	NW.Hnd	W.Hnd	Fold	Pulse	Clap	Exer	Smoke	Height	M
##	.I											
##	1	Female	18.0	17.7	Right	L on R	64	Right	Some	Never	172.72	Imperi
##	2	Female	17.0	17.3	Right	R on L	74	Right	Freq	Never	157.00	Metr
##	3	Female	17.0	17.2	Right	L on R	80	Right	Freq	Never	156.20	Imperi
##	4	Female	17.1	17.5	Right	R on L	72	Right	Freq	Heavy	166.40	Imperi
##	5	Female	17.8	18.0	Right	R on L	72	Right	Some	Never	154.94	Imperi
##	6	Female	20.1	20.2	Right	L on R	80	Right	Some	Never	176.50	Imperi
##	7	Female	18.0	17.6	Right	R on L	60	Right	Some	Occas	168.00	Metr
##	8	Female	19.6	19.7	Right	L on R	70	Right	Freq	Never	178.00	Metr
##	9	Female	17.0	16.6	Right	R on L	68	Right	Some	Never	171.00	Metr
##	10	Female	17.5	17.5	Right	Neither	68	Right	Freq	Heavy	170.00	Metr
##	11	Female	17.0	17.6	Right	L on R	76	Right	Some	Never	165.00	Metr
##	12	Female	17.7	17.0	Right	R on L	76	Right	Some	Never	167.00	Metr
##	13	Female	18.2	18.0	Right	L on R	70	Right	Some	Never	162.56	Imperi
##	14	Female	18.2	17.5	Right	L on R	70	Right	Some	Never	165.00	Metr
##	15	Female	17.5	17.5	Right	R on L	60	Right	Freq	Never	166.50	Metr
##	16	Female	17.5	17.3	Right	R on L	72	Right	Freq	Never	175.00	Metr
##	17	Female	19.5	18.5	Right	R on L	80	Right	Some	Never	170.00	Metr
##	18	Female	17.2	16.7	Right	R on L	75	Right	Freq	Never	170.18	Imperi
##	19	Female	16.9	16.0	Right	L on R	70	Right	None	Never	158.00	Metr
##	20	Female	17.0	16.7	Right	R on L	70	Right	Some	Never	159.00	Metr
##	21	Female	18.5	18.0	Right	R on L	92	Right	Freq	Never	172.00	Metr
##	22	Female	16.0	16.0	Right	R on L	68	Right	Freq	Never	172.72	Imperi
##	23	Female	17.5	17.0	Right	R on L	74	Right	Freq	Never	157.00	Metr
##	24	Female	16.4	16.5	Right	L on R	90	Right	Some	Never	152.00	Metr

## 25 Female	19.5	18.5	Right	L on R	68	Right	None	Never	167.00	Metric
## 26 Female	18.0	18.6	Right	R on L	84	Right	Some	Never	175.00	Metric
## 27 Female	19.0	18.8	Right	R on L	65	Right	Freq	Never	172.72	Imperial
## 28 Female	13.0	12.5	Right	L on R	80	Right	Freq	Never	165.00	Metric
## 29 Female	16.3	16.2	Right	L on R	92	Right	Some	Regul	152.40	Imperial
## 30 Female	18.9	19.2	Right	L on R	74	Right	Some	Never	167.64	Imperial
## 31 Female	19.5	19.2	Right	R on L	70	Right	Some	Never	170.00	Metric
## 32 Female	16.5	15.0	Right	L on R	65	Right	Some	Regul	160.02	Imperial
## 33 Female	17.0	16.5	Right	R on L	70	Right	Some	Never	162.56	Imperial
## 34 Female	17.5	17.6	Right	L on R	79	Right	Some	Never	162.50	Metric
## 35 Female	17.0	17.0	Right	L on R	79	Right	Some	Never	163.00	Metric
## 36 Female	17.0	17.6	Right	L on R	76	Right	Some	Never	165.00	Metric
## 37 Female	19.1	19.0	Right	R on L	80	Right	Some	Occas	170.00	Metric
## 38 Female	16.2	15.8	Right	R on L	61	Right	Some	Occas	167.00	Metric
## 39 Female	18.5	18.0	Right	Neither	86	Right	None	Never	160.00	Metric
## 40 Female	17.5	17.6	Right	L on R	76	Right	Some	Never	153.50	Metric
## 41 Female	18.6	18.6	Right	L on R	74	Right	Some	Never	160.00	Metric
## 42 Female	18.0	17.8	Right	L on R	68	Right	Some	Never	168.90	Imperial
## 43 Female	15.9	16.5	Right	R on L	70	Right	Freq	Never	167.64	Imperial
## 44 Female	17.5	18.4	Right	R on L	88	Right	Some	Never	162.56	Imperial
## 45 Female	18.8	18.3	Right	R on L	80	Right	Some	Heavy	170.18	Imperial
## 46 Female	18.6	18.8	Right	L on R	70	Right	Freq	Regul	167.00	Metric
## 47 Female	18.8	18.5	Right	R on L	80	Right	Some	Never	169.00	Metric
## 48 Female	18.0	18.0	Right	L on R	85	Right	Some	Never	165.10	Imperial
## 49 Female	18.5	18.0	Right	L on R	88	Right	Some	Never	160.00	Metric

[illegible]

```
## 48 17.667
## 49 16.917
## 50 17.750
```

```
#4
```

```
y=filter(cleansurvey,cleansurvey$Exer=="None")
print(y)
```

```
##      Sex Wr.Hnd NW.Hnd W.Hnd      Fold Pulse      Clap Exer Smoke Height
M.I
## 1   Male   19.5   20.5  Left  R on L   104    Left None Regul 177.80 Impe
rial
## 2   Male   22.5   23.0 Right  R on L    96    Right None Never 170.00 Me
tric
## 3 Female   18.0   17.9 Right  R on L    50    Left None Never 165.00 Me
tric
## 4 Female   15.5   15.4 Right  R on L    70 Neither None Never 157.48 Impe
rial
## 5   Male   18.9   19.1 Right  L on R    60 Neither None Never 170.00 Me
tric
## 6   Male   19.2   19.6 Right  L on R    80    Right None Never 190.50 Impe
rial
## 7 Female   16.9   16.0 Right  L on R    70    Right None Never 158.00 Me
tric
## 8 Female   19.5   18.5 Right  L on R    68    Right None Never 167.00 Me
tric
## 9   Male   18.9   19.1 Right  L on R    68    Right None Never 180.34 Impe
rial
## 10 Female  17.5   17.1 Right  R on L    80    Left None Never 167.00 Me
tric
## 11  Male   18.5   18.5 Right  R on L    65    Right None Never 165.00 Me
tric
## 12  Male   17.9   18.4 Right  R on L    68    Left None Occas 176.00 Me
tric
## 13 Female  18.5   18.0 Right Neither    86    Right None Never 160.00 Me
tric
## 14  Male   17.5   17.0  Left  L on R    97 Neither None Never 165.00 Me
tric
##      Age
## 1  17.583
## 2  19.417
## 3  30.750
## 4  17.167
## 5  17.750
## 6  18.167
## 7  20.500
## 8  18.667
## 9  43.833
## 10 18.417
## 11 18.500
```

```
## 12 18.917
## 13 20.167
## 14 19.500
```

#5

```
dplyr::select(cleansurvey, Sex, Age, Wr.Hnd)
```

##	Sex	Age	Wr.Hnd
## 1	Female	18.250	18.5
## 2	Male	17.583	19.5
## 5	Male	23.667	20.0
## 6	Female	21.000	18.0
## 7	Male	18.833	17.7
## 8	Female	35.833	17.0
## 9	Male	19.000	20.0
## 10	Male	22.333	18.5
## 11	Female	28.500	17.0
## 14	Female	17.500	19.5
## 17	Female	19.333	18.0
## 18	Male	18.333	19.4
## 20	Male	17.917	21.0
## 21	Male	17.917	21.5
## 22	Male	18.167	20.1
## 23	Male	17.833	18.5
## 24	Male	18.250	21.5
## 27	Male	17.500	21.0
## 28	Male	18.083	20.8
## 30	Male	19.250	19.5
## 32	Male	17.500	18.8
## 33	Female	39.750	17.1
## 34	Male	17.167	20.1
## 36	Male	18.000	22.2
## 38	Male	17.917	19.4
## 39	Male	35.500	22.0
## 42	Female	17.083	17.8
## 44	Female	17.500	20.1
## 47	Male	18.917	23.2
## 48	Male	19.417	22.5
## 49	Female	18.417	18.0
## 50	Female	30.750	18.0
## 51	Male	18.500	22.0
## 52	Male	17.500	20.5
## 53	Male	18.333	17.0
## 54	Male	17.417	20.5
## 55	Male	20.000	22.5
## 57	Female	17.167	15.5
## 59	Male	17.667	19.5
## 61	Male	20.333	22.8
## 62	Female	17.333	18.5
## 63	Female	17.500	19.6

##	65	Female	18.583	17.3
##	71	Female	17.583	18.0
##	73	Female	17.667	17.0
##	74	Female	17.417	16.5
##	75	Female	17.750	15.6
##	76	Female	20.667	17.5
##	77	Female	23.583	17.0
##	79	Female	17.083	18.3
##	82	Male	20.167	19.2
##	85	Male	17.167	23.0
##	86	Female	17.250	17.7
##	87	Female	18.000	18.2
##	88	Female	18.750	18.3
##	89	Male	21.583	18.0
##	91	Male	19.667	20.5
##	93	Female	19.667	18.2
##	95	Male	22.833	21.3
##	97	Male	19.417	20.0
##	98	Female	23.250	17.5
##	100	Female	19.083	19.4
##	102	Male	17.750	18.9
##	104	Female	20.167	17.5
##	105	Female	17.667	17.5
##	106	Female	18.250	19.5
##	109	Male	18.583	17.5
##	110	Male	17.750	19.7
##	111	Female	24.167	18.5
##	112	Male	18.167	19.2
##	113	Female	21.167	17.2
##	114	Male	17.917	20.5
##	115	Female	17.417	16.0
##	116	Female	20.500	16.9
##	117	Female	22.917	17.0
##	118	Male	18.917	23.0
##	119	Female	18.917	18.5
##	120	Male	20.083	21.0
##	122	Male	18.250	22.5
##	123	Female	17.500	18.5
##	124	Male	17.417	19.8
##	125	Male	21.000	18.5
##	127	Female	17.667	16.0
##	128	Male	18.083	18.8
##	129	Female	18.000	17.5
##	130	Female	18.333	16.4
##	131	Male	20.000	22.0
##	132	Male	18.750	19.0
##	134	Female	18.500	15.4
##	135	Male	18.417	17.9
##	136	Male	19.167	23.1
##	138	Male	19.333	22.0

##	140	Female	18.667	19.5
##	141	Female	17.500	18.0
##	143	Female	17.250	19.0
##	144	Male	19.000	21.4
##	145	Female	19.167	20.0
##	146	Male	19.000	18.5
##	147	Male	23.000	22.5
##	148	Male	32.667	19.5
##	149	Female	20.000	18.0
##	150	Female	20.167	18.0
##	151	Male	25.500	21.8
##	152	Female	18.167	13.0
##	153	Female	23.500	16.3
##	154	Male	70.417	21.5
##	155	Male	43.833	18.9
##	156	Male	23.583	20.5
##	158	Female	44.250	18.9
##	160	Male	17.917	18.5
##	161	Female	18.417	17.5
##	163	Male	17.500	20.2
##	164	Female	29.083	16.5
##	166	Female	18.500	17.6
##	167	Female	18.167	19.5
##	168	Female	32.750	16.5
##	170	Male	17.333	19.0
##	172	Male	18.667	20.5
##	174	Female	18.667	18.0
##	175	Female	17.750	17.5
##	176	Female	17.250	19.0
##	177	Male	36.583	20.5
##	178	Female	23.083	16.7
##	180	Female	17.167	17.0
##	181	Male	23.417	19.0
##	182	Female	17.083	14.0
##	183	Female	17.250	17.5
##	184	Male	23.833	18.5
##	185	Male	18.750	18.0
##	186	Male	21.167	20.5
##	187	Female	24.667	17.0
##	188	Male	18.500	18.5
##	189	Male	20.333	18.0
##	190	Male	20.083	18.5
##	191	Male	18.917	20.0
##	192	Male	27.333	22.0
##	193	Male	18.917	17.9
##	194	Female	17.250	17.6
##	196	Female	26.500	17.0
##	197	Female	17.000	15.0
##	198	Male	17.167	16.0
##	199	Female	19.167	19.1



##	200	Female	17.500	17.5
##	201	Female	19.250	16.2
##	202	Male	21.333	21.0
##	204	Female	20.167	18.5
##	205	Male	18.667	17.0
##	206	Female	17.083	17.5
##	207	Female	17.417	17.5
##	208	Male	18.583	17.5
##	209	Male	19.500	17.5
##	211	Female	17.167	18.6
##	212	Female	17.250	17.5
##	214	Male	20.417	17.0
##	215	Female	17.083	18.0
##	218	Male	19.333	18.2
##	220	Male	18.917	23.2
##	222	Female	17.333	15.9
##	223	Female	18.167	17.5
##	227	Female	18.417	18.8
##	228	Male	17.417	20.0
##	229	Female	20.333	18.6
##	230	Male	19.333	18.6
##	231	Female	18.167	18.8
##	233	Female	17.667	18.0
##	234	Female	16.917	18.5
##	236	Male	17.167	21.0
##	237	Female	17.750	17.6