Assign

Samuel Mweni

2/15/2023

library(tidyverse)

## -- Attaching packages --------------------------------------- tidyverse 1.3.2 --  
## v ggplot2 3.4.0 v purrr 1.0.1  
## v tibble 3.1.8 v dplyr 1.1.0  
## v tidyr 1.3.0 v stringr 1.5.0  
## v readr 2.1.3 v forcats 1.0.0  
## -- Conflicts ------------------------------------------ tidyverse\_conflicts() --  
## x dplyr::filter() masks stats::filter()  
## x dplyr::lag() masks stats::lag()

library(ggplot2)  
library(dplyr)

#1 Use and show r code to import the Astronauts csv file.

astron<- read.csv("Astronauts.csv")  
head(astron)

## Name Year Group Status Birth.Date Birth.Place Gender  
## 1 Joseph M. Acaba 2004 19 Active 5/17/1967 Inglewood, CA Male  
## 2 Loren W. Acton NA NA Retired 3/7/1936 Lewiston, MT Male  
## 3 James C. Adamson 1984 10 Retired 3/3/1946 Warsaw, NY Male  
## 4 Thomas D. Akers 1987 12 Retired 5/20/1951 St. Louis, MO Male  
## 5 Buzz Aldrin 1963 3 Retired 1/20/1930 Montclair, NJ Male  
## 6 Andrew M. Allen 1987 12 Retired 8/4/1955 Philadelphia, PA Male  
## Alma.Mater  
## 1 University of California-Santa Barbara; University of Arizona  
## 2 Montana State University; University of Colorado  
## 3 US Military Academy; Princeton University  
## 4 University of Missouri-Rolla  
## 5 US Military Academy; MIT  
## 6 Villanova University; University of Florida  
## Undergraduate.Major Graduate.Major Military.Rank  
## 1 Geology Geology   
## 2 Engineering Physics Solar Physics   
## 3 Engineering Aerospace Engineering Colonel  
## 4 Applied Mathematics Applied Mathematics Colonel  
## 5 Mechanical Engineering Astronautics Colonel  
## 6 Mechanical Engineering Business Administration Lieutenant Colonel  
## Military.Branch Space.Flights Space.Flight..hr. Space.Walks  
## 1 2 3307 2  
## 2 1 190 0  
## 3 US Army (Retired) 2 334 0  
## 4 US Air Force (Retired) 4 814 4  
## 5 US Air Force (Retired) 2 289 2  
## 6 US Marine Corps (Retired) 3 906 0  
## Space.Walks..hr.  
## 1 13  
## 2 0  
## 3 0  
## 4 29  
## 5 8  
## 6 0  
## Missions  
## 1 STS-119 (Discovery), ISS-31/32 (Soyuz)  
## 2 STS 51-F (Challenger)  
## 3 STS-28 (Columbia), STS-43 (Atlantis)  
## 4 STS-41 (Discovery), STS-49 (Endeavor), STS-61 (Endeavor), STS-79 (Atlantis)  
## 5 Gemini 12, Apollo 11  
## 6 STS-46 (Atlantis), STS-62 (Columbia), STS-75 (Columbia)  
## Death.Date Death.Mission  
## 1   
## 2   
## 3   
## 4   
## 5   
## 6

#2 Use and show r code to determine the number of Astronauts who are # in the data table and the number of descriptive column variables.

dim(astron)

## [1] 357 19

There are 357 astronauts and 19 descriptive column variables.

# 3 Use and show r code to produce the number and the

# names of only the female Astronauts.

astron%>%  
 filter(Gender=="Female")->fastron  
fastron

## Name Year Group Status Birth.Date  
## 1 Serena M. Aunon 2009 20 Active 4/9/1976  
## 2 Ellen S. Baker 1984 10 Retired 4/27/1953  
## 3 Yvonne D. Cagle 1996 16 Management 4/24/1959  
## 4 Tracy E. Caldwell (Dyson) 1998 17 Active 8/14/1969  
## 5 Kalpana Chawla 1995 15 Deceased 6/1/1961  
## 6 Laurel B. Clark 1996 16 Deceased 3/10/1961  
## 7 Mary L. Cleave 1980 9 Retired 2/5/1947  
## 8 Catherine G. Coleman 1992 14 Active 12/14/1960  
## 9 Eileen M. Collins 1990 13 Retired 11/19/1959  
## 10 Nancy J. Currie 1990 13 Management 12/29/1958  
## 11 N. Jan Davis 1987 12 Retired 11/1/1953  
## 12 Bonnie J. Dunbar 1980 9 Retired 3/3/1949  
## 13 Jeanette J. Epps 2009 20 Active 11/3/1970  
## 14 Anna L. Fisher 1978 8 Management 8/24/1949  
## 15 Linda M. Godwin 1985 11 Retired 7/2/1952  
## 16 Susan J. Helms 1990 13 Retired 2/26/1958  
## 17 Joan E. Higginbotham 1996 16 Retired 8/3/1964  
## 18 Kathryn P. Hire 1995 15 Management 8/26/1959  
## 19 Millie Hughes-Fulford NA NA Retired 12/21/1945  
## 20 Marsha S. Ivins 1984 10 Retired 4/15/1951  
## 21 Mae C. Jemison 1987 12 Retired 10/17/1956  
## 22 Tamara E. Jernigan 1985 11 Retired 5/7/1959  
## 23 Janet L. Kavandi 1995 15 Management 7/17/1959  
## 24 Susan L. Kilrain (Still) 1995 15 Retired 10/24/1961  
## 25 Wendy B. Lawrence 1992 14 Retired 7/2/1959  
## 26 Shannon W. Lucid 1978 8 Retired 1/14/1943  
## 27 Sandra H. Magnus 1996 16 Retired 10/30/1964  
## 28 K. Megan McArthur 2000 18 Active 8/30/1971  
## 29 S. Christa McAuliffe NA NA Deceased 9/2/1948  
## 30 Pamela A. Melroy 1995 15 Retired 9/17/1961  
## 31 Dorothy M. Metcalf-Lindenberger 2004 19 Active 5/2/1975  
## 32 Barbara R. Morgan 1998 17 Retired 11/28/1951  
## 33 Lisa M. Nowak 1996 16 Retired 5/10/1963  
## 34 Karen L. Nyberg 2000 18 Active 10/7/1969  
## 35 Ellen Ochoa 1990 13 Management 5/10/1958  
## 36 Judith A. Resnik 1978 8 Deceased 4/5/1949  
## 37 Sally K. Ride 1978 8 Deceased 5/26/1951  
## 38 Patricia Hilliard Robertson 1998 17 Deceased 3/12/1963  
## 39 Kathleen Rubins 2009 20 Active 10/14/1978  
## 40 Margaret Rhea Seddon 1978 8 Retired 11/8/1947  
## 41 Heidemarie M. Stefanyshyn-Piper 1996 16 Retired 2/7/1963  
## 42 Nicole P. Stott 2000 18 Active 11/19/1962  
## 43 Kathryn D. Sullivan 1978 8 Retired 10/3/1951  
## 44 Kathryn C. Thornton 1984 10 Retired 8/17/1952  
## 45 Janice E. Voss 1990 13 Deceased 10/8/1956  
## 46 Shannon Walker 2004 19 Active 6/4/1965  
## 47 Mary E. Weber 1992 14 Retired 8/24/1962  
## 48 Peggy A. Whitson 1996 16 Active 2/9/1960  
## 49 Sunita L. Williams 1998 17 Active 9/19/1965  
## 50 Stephanie D. Wilson 1996 16 Active 9/27/1966  
## Birth.Place Gender  
## 1 Indianapolis, IN Female  
## 2 Fayettesville, NC Female  
## 3 West Point, NY Female  
## 4 Arcadia, CA Female  
## 5 Karnal, India Female  
## 6 Ames, IA Female  
## 7 Southampton, NY Female  
## 8 Charleston, SC Female  
## 9 Elmira, NY Female  
## 10 Wilmington, DE Female  
## 11 Cocoa Beach, FL Female  
## 12 Sunnyside, WA Female  
## 13 Syracuse, NY Female  
## 14 New York, NY Female  
## 15 Cape Girardeau, MO Female  
## 16 Charlotte, NC Female  
## 17 Chicago, IL Female  
## 18 Mobile, AL Female  
## 19 Mineral Wells, TX Female  
## 20 Baltimore, MD Female  
## 21 Decatur, AL Female  
## 22 Chattanooga, TN Female  
## 23 Springfield, MO Female  
## 24 Augusta, GA Female  
## 25 Jacksonville, FL Female  
## 26 Shanghai, China Female  
## 27 Belleville, IL Female  
## 28 Honolulu, HI Female  
## 29 Boston, MA Female  
## 30 Palo Alto, CA Female  
## 31 Colorado Springs, CO Female  
## 32 Fresno, CA Female  
## 33 Washington, DC Female  
## 34 Parkerâ\200\231s Prairie, MN Female  
## 35 Los Angeles, CA Female  
## 36 Akron, OH Female  
## 37 Los Angeles, CA Female  
## 38 Indiana, PA Female  
## 39 Farmington, CT Female  
## 40 Murfreesboro, TN Female  
## 41 St. Paul, MN Female  
## 42 Albany, NY Female  
## 43 Patterson, NJ Female  
## 44 Montgomery, AL Female  
## 45 South Bend, IN Female  
## 46 Houston, TX Female  
## 47 Cleveland, OH Female  
## 48 Mt. Ayr, IA Female  
## 49 Euclid, OH Female  
## 50 Boston, MA Female  
## Alma.Mater  
## 1 George Washington University; University of Texas  
## 2 State University of New York-Buffalo; Cornell University; University of Texas  
## 3 San Francisco State University  
## 4 California State University-Fullerton; University of California-Davis  
## 5 Punjab Engineering College; University of Texas-Arlington; University of Colorado  
## 6 University of Wisconsin-Madison  
## 7 Colorado State University; Utah State University  
## 8 MIT; University of Massachusetts  
## 9 Syracuse University; Stanford University; Webster University  
## 10 Ohio State University; University of Southern California; University of Houston  
## 11 Georgia Institute of Technology; Auburn University; University of Alabama-Huntsville  
## 12 University of Washington; University of Houston  
## 13 LeMoyne College; University of Maryland  
## 14 University of California-Los Angeles  
## 15 Southeast Missouri State; University of Missouri  
## 16 US Air Force Academy; Stanford University  
## 17 Southern Illinois University-Carbondale; Florida Institute of Technology  
## 18 US Naval Academy; Florida State Institute of Technology  
## 19 Tarleton State University; Texas Womanâ\200\231s University  
## 20 University of Colorado  
## 21 Stanford University; Cornell University  
## 22 Stanford University; University of California-Berkeley; Rice University  
## 23 Missouri Southern State College; University of Missouri; University of Washington  
## 24 Embry-Riddle University; Georgia Institute of Technology  
## 25 US Naval Academy; MIT  
## 26 University of Oklahoma  
## 27 University of Missouri-Rolla; Georgia Institute of Technology  
## 28 University of California-Los Angeles; University of California-San Diego  
## 29 Framingham State College; Bowie State College  
## 30 Wellesley College; MIT  
## 31 Whitman College  
## 32 Stanford University  
## 33 US Naval Academy; US Naval Postgraduate School  
## 34 University of North Dakota; University of Texas  
## 35 San Diego State University; Stanford University  
## 36 Carnegie-Mellon University; University of Maryland  
## 37 Stanford University  
## 38 Indiana University of Pennsylvania; Medical College of Pennsylvania  
## 39 University of California-San Diego; Stanford University  
## 40 University of California-Berkeley; University of Tennessee  
## 41 MIT  
## 42 Embry-Riddle Aeronautical University; University of Central Florida  
## 43 University of California-Santa Cruz; Dalhousie University  
## 44 Auburn University; University of Virginia  
## 45 Purdue University; MIT  
## 46 Rice University  
## 47 Purdue University; University of California-Berkeley  
## 48 Iowa Wesleyan College; Rice University  
## 49 US Naval Academy; Florida Institute of Technology  
## 50 Harvard University; University of Texas  
## Undergraduate.Major  
## 1 Electrical Engineering  
## 2 Geology  
## 3 Biochemistry  
## 4 Chemistry  
## 5 Aeronautical Engineering  
## 6 Zoology  
## 7 Biological Science  
## 8 Chemistry  
## 9 Mathematics & Economics  
## 10 Biological Science  
## 11 Applied Biology; Mechanical Engineering  
## 12 Ceramic Engineering  
## 13 Physics  
## 14 Chemistry  
## 15 Mathematics & Physics  
## 16 Aeronautical Engineering  
## 17 Electrical Engineering  
## 18 Engineering Management  
## 19 Chemistry & Biology  
## 20 Aerospace Engineering  
## 21 Chemical Engineering  
## 22 Physics  
## 23 Chemistry  
## 24 Astronautical Engineering  
## 25 Ocean Engineering  
## 26 Chemistry  
## 27 Physics  
## 28 Aerospace Engineering  
## 29 Education  
## 30 Physics & Astronomy  
## 31 Geology  
## 32 Human Biology  
## 33 Aerospace Engineering  
## 34 Mechanical Engineering  
## 35 Physics  
## 36 Electrical Engineering  
## 37 Physics; English  
## 38 Biology  
## 39 Molecular Biology  
## 40 Physiology  
## 41 Mechanical Engineering  
## 42 Aeronautical Engineering  
## 43 Earth Sciences  
## 44 Physics  
## 45 Engineering Science  
## 46 Space Physics  
## 47 Chemical Engineering  
## 48 Chemistry & Biology  
## 49 Physical Science  
## 50 Engineering Science  
## Graduate.Major Military.Rank  
## 1 Medicine   
## 2 Medicine; Public Health   
## 3 Colonel  
## 4 Physical Chemistry   
## 5 Aerospace Engineering   
## 6 Medicine Captain  
## 7 Microbial Ecology; Environmental Engineering   
## 8 Polymer Science & Engineering Colonel  
## 9 Operations Research; Space Systems Management Colonel  
## 10 Safety Engineering; Industrial Engineering Colonel  
## 11 Mechanical Engineering   
## 12 Ceramic Engineering; Biomedical Engineering   
## 13 Aerospace Engineering   
## 14 Chemistry; Medicine   
## 15 Physics   
## 16 Aeronautics & Astronautics Lieutenant General  
## 17 Business Management; Space Systems   
## 18 Space Technology Captain  
## 19   
## 20   
## 21 Medicine   
## 22 Engineering Science; Astronomy   
## 23 Chemistry   
## 24 Aerospace Engineering Commander  
## 25 Ocean Engineering Captain  
## 26 Biochemistry   
## 27 Electrical Engineering; Materials Science & Engineering   
## 28 Oceanography   
## 29 Education   
## 30 Earth & Planetary Sciences Colonel  
## 31   
## 32   
## 33 Aeronautical Engineering Captain  
## 34 Mechanical Engineering   
## 35 Electrical Engineering   
## 36 Electrical Engineering   
## 37 Physics   
## 38 Medicine   
## 39 Cancer Biology   
## 40 Medicine   
## 41 Captain  
## 42 Engineering Management   
## 43 Earth Sciences; Geology   
## 44 Physics   
## 45 Electrical Engineering; Aeronautics & Astronautics   
## 46 Space Physics   
## 47 Physical Chemistry   
## 48 Biochemistry   
## 49 Engineering Management Captain  
## 50 Aerospace Engineering   
## Military.Branch Space.Flights Space.Flight..hr. Space.Walks  
## 1 0 0 0  
## 2 3 686 0  
## 3 US Air Force 0 0 0  
## 4 2 4531 3  
## 5 2 734 0  
## 6 US Navy 1 382 0  
## 7 2 262 0  
## 8 US Air Force (Retired) 3 4324 0  
## 9 US Air Force (Retired) 4 890 0  
## 10 US Army (Retired) 4 999 0  
## 11 3 673 0  
## 12 5 1207 0  
## 13 0 0 0  
## 14 1 191 0  
## 15 4 918 2  
## 16 US Air Force 5 5063 1  
## 17 1 308 0  
## 18 US Naval Reserves 2 711 0  
## 19 1 218 0  
## 20 5 1341 0  
## 21 1 190 0  
## 22 5 1489 1  
## 23 3 812 0  
## 24 US Navy (Retired) 2 472 0  
## 25 US Navy (Retired) 4 1223 0  
## 26 5 5354 0  
## 27 3 3776 0  
## 28 1 309 0  
## 29 1 0 0  
## 30 US Air Force (Retired) 3 914 0  
## 31 1 362 0  
## 32 1 305 0  
## 33 US Navy (Retired) 1 306 0  
## 34 2 4320 0  
## 35 4 979 0  
## 36 2 144 0  
## 37 2 343 0  
## 38 0 0 0  
## 39 1 2762 2  
## 40 3 722 0  
## 41 US Navy 2 663 2  
## 42 2 2477 1  
## 43 3 532 1  
## 44 4 975 3  
## 45 5 1179 0  
## 46 1 3919 0  
## 47 2 450 0  
## 48 3 11698 7  
## 49 US Navy 2 7721 7  
## 50 3 1031 0  
## Space.Walks..hr.  
## 1 0  
## 2 0  
## 3 0  
## 4 23  
## 5 0  
## 6 0  
## 7 0  
## 8 0  
## 9 0  
## 10 0  
## 11 0  
## 12 0  
## 13 0  
## 14 0  
## 15 10  
## 16 9  
## 17 0  
## 18 0  
## 19 0  
## 20 0  
## 21 0  
## 22 8  
## 23 0  
## 24 0  
## 25 0  
## 26 0  
## 27 0  
## 28 0  
## 29 0  
## 30 0  
## 31 0  
## 32 0  
## 33 0  
## 34 0  
## 35 0  
## 36 0  
## 37 0  
## 38 0  
## 39 13  
## 40 0  
## 41 33  
## 42 6  
## 43 3  
## 44 21  
## 45 0  
## 46 0  
## 47 0  
## 48 46  
## 49 50  
## 50 0  
## Missions  
## 1   
## 2 STS-34 (Atlantis), STS-50 (Columbia), STS-71 (Atlantis)  
## 3   
## 4 STS-118 (Endeavor), ISS-23/24 (Soyuz)  
## 5 STS-87 (Columbia), STS-107 (Columbia)  
## 6 STS-107 (Columbia)  
## 7 STS 61-B (Atlantis), STS-30 (Atlantis)  
## 8 STS-73 (Columbia), STS-93 (Columbia), ISS-26/27 (Soyuz)  
## 9 STS-63 (Discovery), STS-84 (Atlantis), STS-114 (Columbia), STS-93 (Discovery)  
## 10 STS-57 (Endeavor), STS-70 (Discovery), STS-88 (Endeavor), STS-109 (Columbia)  
## 11 STS-47 (Endeavor), STS-60 (Discovery), STS-85 (Discovery)  
## 12 STS 61-A (Challenger), STS-32 (Columbia), STS-50 (Columbia), STS-71 (Atlantis), STS-89 (Endeavor)  
## 13   
## 14 STS 51-A (Discovery)  
## 15 STS-37 (Atlantis), STS-59 (Endeavor), STS-76 (Atlantis), STS-108 (Endeavor)  
## 16 STS-54 (Endeavor), STS-64 (Discovery), STS-78 (Columbia), STS-101 (Atlantis), STS-102/105 (Discovery)  
## 17 STS-116 (Discovery)  
## 18 STS-90 (Columbia), STS-130 (Endeavor)  
## 19 STS-40 (Columbia)  
## 20 STS-32 (Columbia), STS-46 (Atlantis), STS-62 (Columbia), STS-81 (Atlantis), STS-98 (Atlantis)  
## 21 STS-47 (Endeavor)  
## 22 STS-40 (Columbia), STS-52 (Columbia), STS-67 (Endeavor), STS-80 (Columbia), STS-98 (Discovery)  
## 23 STS-91 (Discovery), STS-99 (Endeavor), STS-104 (Atlantis)  
## 24 STS-83 (Columbia), STS-94 (Columbia)  
## 25 STS-67 (Endeavor), STS-86 (Atlantis), STS-91 (Discovery), STS-114 (Discovery)  
## 26 STS 51-G (Discovery), STS-34 (Atlantis), STS-43 (Atlantis), STS-58 (Columbia), STS-76/79 (Atlantis)  
## 27 STS-112 (Atlantis), STS-126/119 (Endeavor/Discovery), STS-135 (Atlantis)  
## 28 STS-125 (Atlantis)  
## 29 STS 51-L (Challenger)  
## 30 STS-92 (Discovery), STS-112 (Atlantis), STS-120 (Discovery)  
## 31 STS-131 (Discovery)  
## 32 STS-118 (Endeavor)  
## 33 STS-121 (Discovery)  
## 34 STS-124 (Discovery), ISS-36/37 (Soyuz)  
## 35 STS-56 (Discovery), STS-66 (Atlantis), STS-96 (Discovery), STS-110 (Atlantis)  
## 36 STS 41-D (Discovery), STS 51-L (Challenger)  
## 37 STS-7 (Challenger), STS 41-G (Challenger)  
## 38   
## 39 ISS-48/49 (Soyuz)  
## 40 STS 51-D (Discovery), STS-40 (Columbia), STS-58 (Columbia)  
## 41 STS-115 (Atlantis), STS-126 (Endeavor)  
## 42 STS-128/129 (Discovery/Atlantis), STS-133 (Discovery)  
## 43 STS 41-G (Challenger), STS-31 (Discovery), STS-45 (Atlantis)  
## 44 STS-33 (Discovery), STS-49 (Endeavor), STS-61 (Endeavor), STS-73 (Columbia)  
## 45 STS-57 (Endeavor), STS-63 (Discovery), STS-83 (Columbia), STS-94 (Columbia), STS-99 (Endeavor)  
## 46 ISS-24/25 (Soyuz)  
## 47 STS-70 (Discovery), STS-101 (Atlantis)  
## 48 STS-111/113 (Endeavor), ISS-16 (Soyuz), ISS-50/51 (Soyuz)  
## 49 STS-116/117 (Discovery/Atlantis), ISS-32/33 (Soyuz)  
## 50 STS-121 (Discovery), STS-120 (Discovery), STS-131 (Discovery)  
## Death.Date Death.Mission  
## 1   
## 2   
## 3   
## 4   
## 5 2/1/2003 STS-107 (Columbia)  
## 6 2/1/2003 STS-107 (Columbia)  
## 7   
## 8   
## 9   
## 10   
## 11   
## 12   
## 13   
## 14   
## 15   
## 16   
## 17   
## 18   
## 19   
## 20   
## 21   
## 22   
## 23   
## 24   
## 25   
## 26   
## 27   
## 28   
## 29 1/28/1986 STS 51-L (Challenger)  
## 30   
## 31   
## 32   
## 33   
## 34   
## 35   
## 36 1/28/1986 STS 51-L (Challenger)  
## 37 7/23/2012   
## 38 5/24/2001   
## 39   
## 40   
## 41   
## 42   
## 43   
## 44   
## 45 2/6/2012   
## 46   
## 47   
## 48   
## 49   
## 50

# 4 Use and show R coding to produce a table that shows the

# military rank and the military branch of each Female Astronaut.

fastron%>%  
 select(Military.Rank,Military.Branch)

## Military.Rank Military.Branch  
## 1   
## 2   
## 3 Colonel US Air Force  
## 4   
## 5   
## 6 Captain US Navy  
## 7   
## 8 Colonel US Air Force (Retired)  
## 9 Colonel US Air Force (Retired)  
## 10 Colonel US Army (Retired)  
## 11   
## 12   
## 13   
## 14   
## 15   
## 16 Lieutenant General US Air Force  
## 17   
## 18 Captain US Naval Reserves  
## 19   
## 20   
## 21   
## 22   
## 23   
## 24 Commander US Navy (Retired)  
## 25 Captain US Navy (Retired)  
## 26   
## 27   
## 28   
## 29   
## 30 Colonel US Air Force (Retired)  
## 31   
## 32   
## 33 Captain US Navy (Retired)  
## 34   
## 35   
## 36   
## 37   
## 38   
## 39   
## 40   
## 41 Captain US Navy  
## 42   
## 43   
## 44   
## 45   
## 46   
## 47   
## 48   
## 49 Captain US Navy  
## 50

# 5 Some of the Astronauts in the data table are listed as Active

# and others are not. Use and show r code to determine how many

# Female Astronauts were currently active when this data set was

# constructed

fastron%>%  
 filter(Status=="Active")->Hfastron  
count(Hfastron)

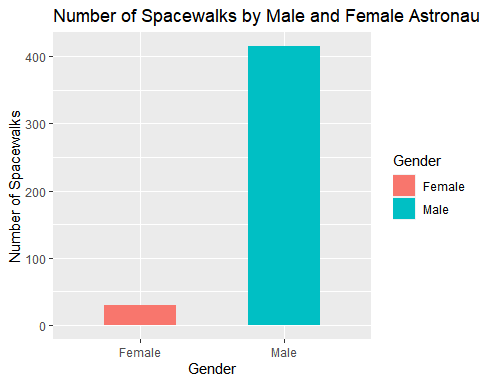
## n  
## 1 13

# 6 Use and show ggplot coding to produce a bar graph that compares

# space walks for Male and Female Astronauts

astron%>%  
 select(Gender,Space.Walks)->Mastron

# Create the bar graph  
ggplot(Mastron, aes(x = Gender, y = Space.Walks, fill = Gender)) +  
 geom\_bar(stat = "identity", width = 0.5) +  
 ggtitle("Number of Spacewalks by Male and Female Astronauts") +  
 ylab("Number of Spacewalks") +  
 xlab("Gender")

 # 7 Use and show r code to produce the table below that lists all # Female Astronauts who have registered one or more Space Walks.

fastron%>%  
 filter(`Space.Walks`>= 1)%>%  
 group\_by(Name,Gender, `Space.Walks`)%>%  
 arrange(Name)%>%  
 summarise(n=n())

## `summarise()` has grouped output by 'Name', 'Gender'. You can override using  
## the `.groups` argument.

## # A tibble: 11 x 4  
## # Groups: Name, Gender [11]  
## Name Gender Space.Walks n  
## <chr> <chr> <int> <int>  
## 1 Heidemarie M. Stefanyshyn-Piper Female 2 1  
## 2 Kathleen Rubins Female 2 1  
## 3 Kathryn C. Thornton Female 3 1  
## 4 Kathryn D. Sullivan Female 1 1  
## 5 Linda M. Godwin Female 2 1  
## 6 Nicole P. Stott Female 1 1  
## 7 Peggy A. Whitson Female 7 1  
## 8 Sunita L. Williams Female 7 1  
## 9 Susan J. Helms Female 1 1  
## 10 Tamara E. Jernigan Female 1 1  
## 11 Tracy E. Caldwell (Dyson) Female 3 1

# 8 Use and show ggplot coding to produce a box plot in order to

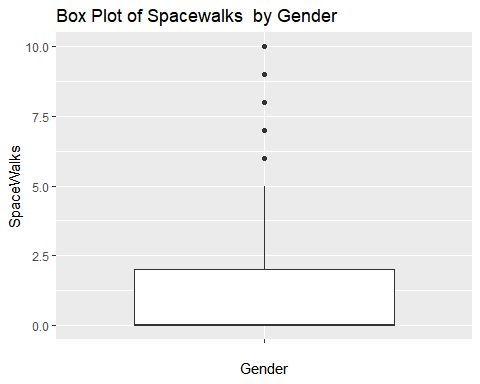
# investigate outliers and the overall distribution for Space

# Walks for males and female astronauts combined. Does the boxplot

# indicate that there are outliers? Using the boxplot, estimate the

# IQR for the data.

ggplot(astron, aes(x = "", y = Space.Walks)) +  
 geom\_boxplot() +  
 ggtitle("Box Plot of Spacewalks by Gender") +  
 ylab("SpaceWalks") +  
 xlab("Gender")



IQR(astron$Space.Walks)

## [1] 2

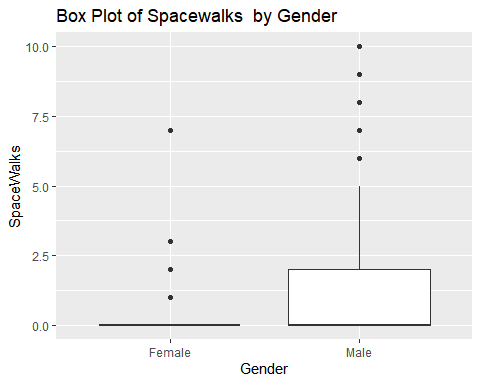
Yes, there are existence of outliers

# 9 Use and show ggplot coding to produce side by side box plots

# in order to investigate outliers and the overall distributions

# for Space Walks for males and female astronauts separately

ggplot(astron, aes(x = Gender, y = Space.Walks)) +  
 geom\_boxplot() +  
 ggtitle("Box Plot of Spacewalks by Gender") +  
 ylab("SpaceWalks") +  
 xlab("Gender")

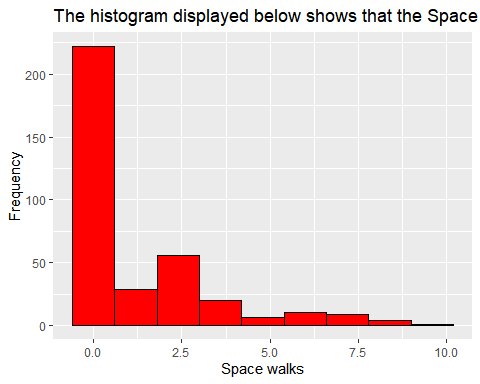


# 10 The histogram displayed below shows that the Space Walks data

# is generally skewed right for all Astronauts (males and females).

# Use and show R code that will produce the histogram displayed.

ggplot(astron, aes(x = Space.Walks)) +  
 geom\_histogram(binwidth = 1.2, color = "black", fill = "red") +  
 ggtitle("The histogram displayed below shows that the Space Walks ") +  
 xlab("Space walks") +  
 ylab("Frequency")



# 11 Use and show R coding to calculate the average(mean) of

# Space Walks for Male and Female Astronauts separately.

mean(fastron$Space.Walks)

## [1] 0.6

astron%>%  
 filter(Gender=="Male")->MaleAstron  
mean(MaleAstron$Space.Walks)

## [1] 1.351792

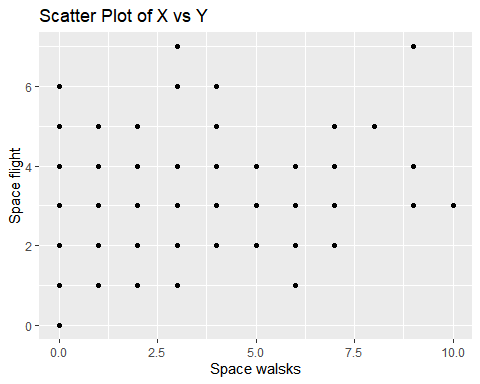
# 12 Does a linear relationship exist between Space Flights and

# Space Walks ? Investigate by using and showing ggplot coding to

# produce a scatter plot. Comment on your findings based on the

# configuration of the scatter plot data points.

ggplot(astron, aes(x = Space.Walks, y =Space.Flights)) +  
 geom\_point() +  
 ggtitle("Scatter Plot of X vs Y") +  
 xlab("Space walsks") +  
 ylab("Space flight")

 There is no linear relationship between spacewalks and space flights

# 13 Mae C. Jemison was the first African American female Astronaut.

# Use and show R code that will output her Undergraduate Major,

# Graduate Major, and Alma Mater.

fastron%>%  
 filter(Name=="Mae C. Jemison")%>%  
 select(Undergraduate.Major,Graduate.Major,Alma.Mater)

## Undergraduate.Major Graduate.Major Alma.Mater  
## 1 Chemical Engineering Medicine Stanford University; Cornell University

# 14 Use and show R code to determine how many female

# Astronauts were members of the US Air Force or retired

# from the US Air Force at the time that the data set was

# generated.

astron2 <- fastron%>%  
 filter(Gender=="Female")%>%  
 filter(`Military.Branch`=="US Air Force" | `Military.Branch`=="US Air Force (Retired)")  
count(astron2)

## n  
## 1 5