Assignment_2_DT

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```
ashes_tidy<-gather(ashes, key="test_innings", value="details", 5:14)
  ashes_tidy <- tibble(ashes_tidy)
  ashes_tidy
```

```
## # A tibble: 260 x 6
##        X batter      team      role         test_innings      details
##    <int> <chr>       <chr>     <chr>        <chr>             <chr>
##  1     1 Anderson    England   bowl         Test.1..Innings.1 Batting at number~
##  2     2 Bell        England   batsman      Test.1..Innings.1 Batting at number~
##  3     3 Clark       Australia bowler       Test.1..Innings.1 Batting at number~
##  4     4 Clarke      Australia batter       Test.1..Innings.1 Batting at number~
##  5     5 Collingwood England   bat          Test.1..Innings.1 Batting at number~
##  6     6 Cook        England   batter       Test.1..Innings.1 Batting at number~
##  7     7 Flintoff    England   all rounder  Test.1..Innings.1 Batting at number~
##  8     8 Gilchrist   Australia wicketkeeper Test.1..Innings.1 Batting at number~
##  9     9 Giles       England   bowl         Test.1..Innings.1 Batting at number~
## 10    10 Harmison    England   bolw         Test.1..Innings.1 Batting at number~
## # i 250 more rows
```

```
#using str_match()
head(ashes_tidy)
```

```
## # A tibble: 6 x 6
##       X batter      team      role    test_innings      details
##   <int> <chr>       <chr>     <chr>   <chr>             <chr>
## 1     1 Anderson    England   bowl    Test.1..Innings.1 Batting at number 11, s~
## 2     2 Bell        England   batsman Test.1..Innings.1 Batting at number 3, sc~
## 3     3 Clark       Australia bowler  Test.1..Innings.1 Batting at number 10, s~
## 4     4 Clarke      Australia batter  Test.1..Innings.1 Batting at number 6, sc~
## 5     5 Collingwood England   bat     Test.1..Innings.1 Batting at number 4, sc~
## 6     6 Cook        England   batter  Test.1..Innings.1 Batting at number 2, sc~
```

```
ashes_tidy <- ashes_tidy %>%
mutate(batting_order=str_match(details, "Batting at number (\\d+), scored")[,2], score=str_match(details
ashes_tidy
```

```
## # A tibble: 260 x 9
##        X batter      team   role  test_innings details batting_order score balls
##    <int> <chr>       <chr>  <chr> <chr>        <chr>   <chr>         <chr> <chr>
##  1     1 Anderson    Engla~ bowl  Test.1..Inn~ Battin~ 11            2     8
```

```
##  2     2 Bell        Engla~ bats~ Test.1..Inn~ Battin~ 3             50    162
##  3     3 Clark       Austr~ bowl~ Test.1..Inn~ Battin~ 10            39    23
##  4     4 Clarke      Austr~ batt~ Test.1..Inn~ Battin~ 6             56    94
##  5     5 Collingwood Engla~ bat   Test.1..Inn~ Battin~ 4             5     13
##  6     6 Cook        Engla~ batt~ Test.1..Inn~ Battin~ 2             11    15
##  7     7 Flintoff    Engla~ all ~ Test.1..Inn~ Battin~ 6             0     3
##  8     8 Gilchrist   Austr~ wick~ Test.1..Inn~ Battin~ 7             0     3
##  9     9 Giles       Engla~ bowl  Test.1..Inn~ Battin~ 8             24    39
## 10    10 Harmison    Engla~ bolw  Test.1..Inn~ Battin~ 10            0     5
## # i 250 more rows
```

```
head(ashes_tidy)
```

```
## # A tibble: 6 x 9
##       X batter      team    role  test_innings details batting_order score balls
##   <int> <chr>       <chr>   <chr> <chr>        <chr>   <chr>         <chr> <chr>
## 1     1 Anderson    England bowl  Test.1..Inn~ Battin~ 11            2     8
## 2     2 Bell        England bats~ Test.1..Inn~ Battin~ 3             50    162
## 3     3 Clark       Austra~ bowl~ Test.1..Inn~ Battin~ 10            39    23
## 4     4 Clarke      Austra~ batt~ Test.1..Inn~ Battin~ 6             56    94
## 5     5 Collingwood England bat   Test.1..Inn~ Battin~ 4             5     13
## 6     6 Cook        England batt~ Test.1..Inn~ Battin~ 2             11    15
```

```
#question 1(b)
ashes_tidy$batting_order <- as.integer(ashes_tidy$batting_order)
ashes_tidy$score <- as.integer(ashes_tidy$score)
ashes_tidy$balls <- as.integer(ashes_tidy$balls)
ashes_tidy$role <- as_factor(ashes_tidy$role)
ashes_tidy$team <- as_factor(ashes_tidy$team)
ashes_tidy
```

```
## # A tibble: 260 x 9
##       X batter      team   role  test_innings details batting_order score balls
##   <int> <chr>       <fct>  <fct> <chr>        <chr>           <int> <int> <int>
##  1     1 Anderson    Engla~ bowl  Test.1..Inn~ Battin~            11     2     8
##  2     2 Bell        Engla~ bats~ Test.1..Inn~ Battin~             3    50   162
##  3     3 Clark       Austr~ bowl~ Test.1..Inn~ Battin~            10    39    23
##  4     4 Clarke      Austr~ batt~ Test.1..Inn~ Battin~             6    56    94
##  5     5 Collingwood Engla~ bat   Test.1..Inn~ Battin~             4     5    13
##  6     6 Cook        Engla~ batt~ Test.1..Inn~ Battin~             2    11    15
##  7     7 Flintoff    Engla~ all ~ Test.1..Inn~ Battin~             6     0     3
##  8     8 Gilchrist   Austr~ wick~ Test.1..Inn~ Battin~             7     0     3
##  9     9 Giles       Engla~ bowl  Test.1..Inn~ Battin~             8    24    39
## 10    10 Harmison    Engla~ bolw  Test.1..Inn~ Battin~            10     0     5
## # i 250 more rows
```

```
head(ashes_tidy)
```

```
## # A tibble: 6 x 9
##       X batter      team    role  test_innings details batting_order score balls
##   <int> <chr>       <fct>   <fct> <chr>        <chr>           <int> <int> <int>
## 1     1 Anderson    England bowl  Test.1..Inn~ Battin~            11     2     8
```

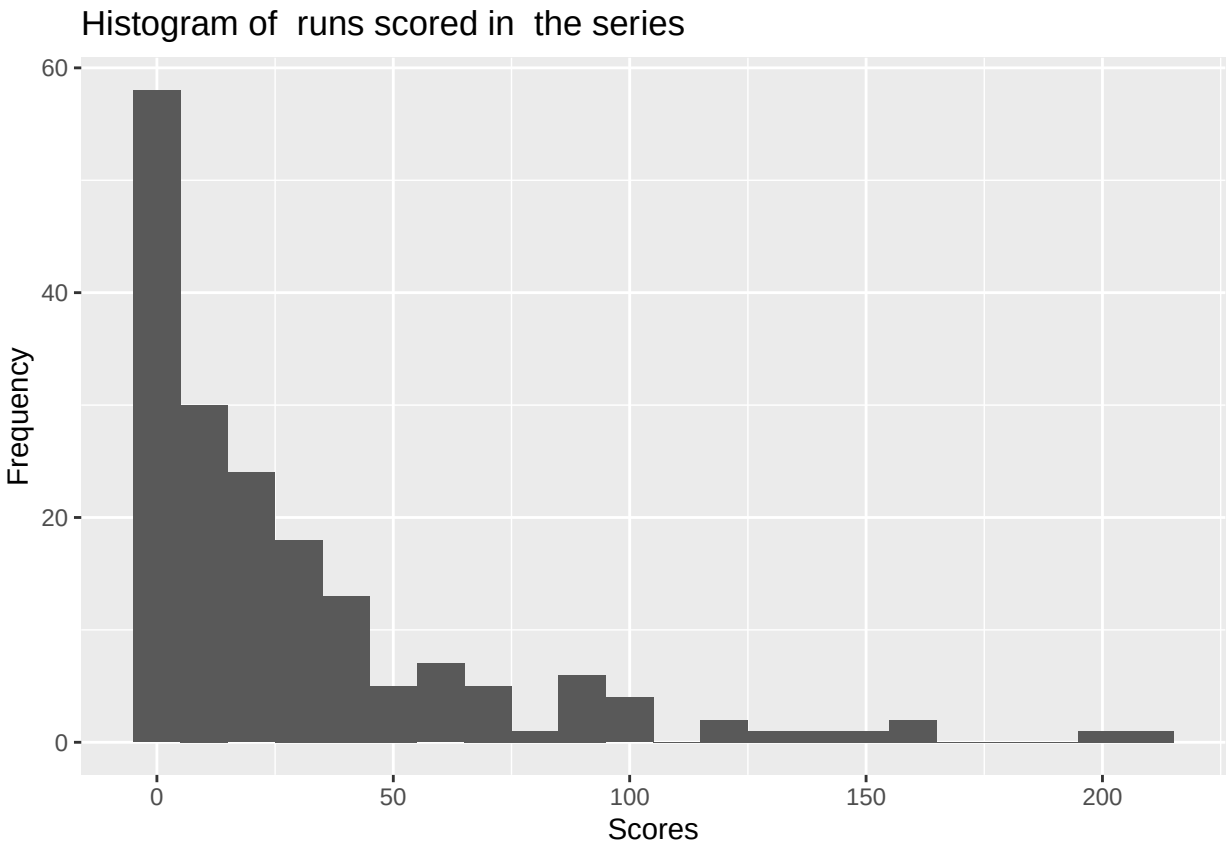
```
## 2     2 Bell        England bats~ Test.1..Inn~ Battin~             3    50   162
## 3     3 Clark       Austra~ bowl~ Test.1..Inn~ Battin~            10    39    23
## 4     4 Clarke      Austra~ batt~ Test.1..Inn~ Battin~             6    56    94
## 5     5 Collingwood England bat   Test.1..Inn~ Battin~             4     5    13
## 6     6 Cook        England batt~ Test.1..Inn~ Battin~             2    11    15
```

```
#1c
ashes_tidy$role <- ashes_tidy$role %>%
fct_recode(
all_rounder="all rounder",
bowler="bolw",
bowler="bowl",
batsman="batter",
batsman="bat")
ashes_tidy
```

```
## # A tibble: 260 x 9
##        X batter      team   role  test_innings details batting_order score balls
##    <int> <chr>       <fct>  <fct> <chr>        <chr>           <int> <int> <int>
##  1     1 Anderson    Engla~ bowl~ Test.1..Inn~ Battin~            11     2     8
##  2     2 Bell        Engla~ bats~ Test.1..Inn~ Battin~             3    50   162
##  3     3 Clark       Austr~ bowl~ Test.1..Inn~ Battin~            10    39    23
##  4     4 Clarke      Austr~ bats~ Test.1..Inn~ Battin~             6    56    94
##  5     5 Collingwood Engla~ bats~ Test.1..Inn~ Battin~             4     5    13
##  6     6 Cook        Engla~ bats~ Test.1..Inn~ Battin~             2    11    15
##  7     7 Flintoff    Engla~ all_~ Test.1..Inn~ Battin~             6     0     3
##  8     8 Gilchrist   Austr~ wick~ Test.1..Inn~ Battin~             7     0     3
##  9     9 Giles       Engla~ bowl~ Test.1..Inn~ Battin~             8    24    39
## 10    10 Harmison    Engla~ bowl~ Test.1..Inn~ Battin~            10     0     5
## # i 250 more rows
```

```
#2a
ggplot(data=ashes_tidy, aes(x=score))+
geom_histogram(binwidth = 10)+ labs(title = "Histogram of  runs scored in  the series", x = "Scores", y
```

```
## Warning: Removed 80 rows containing non-finite values (‘stat_bin()‘).
```



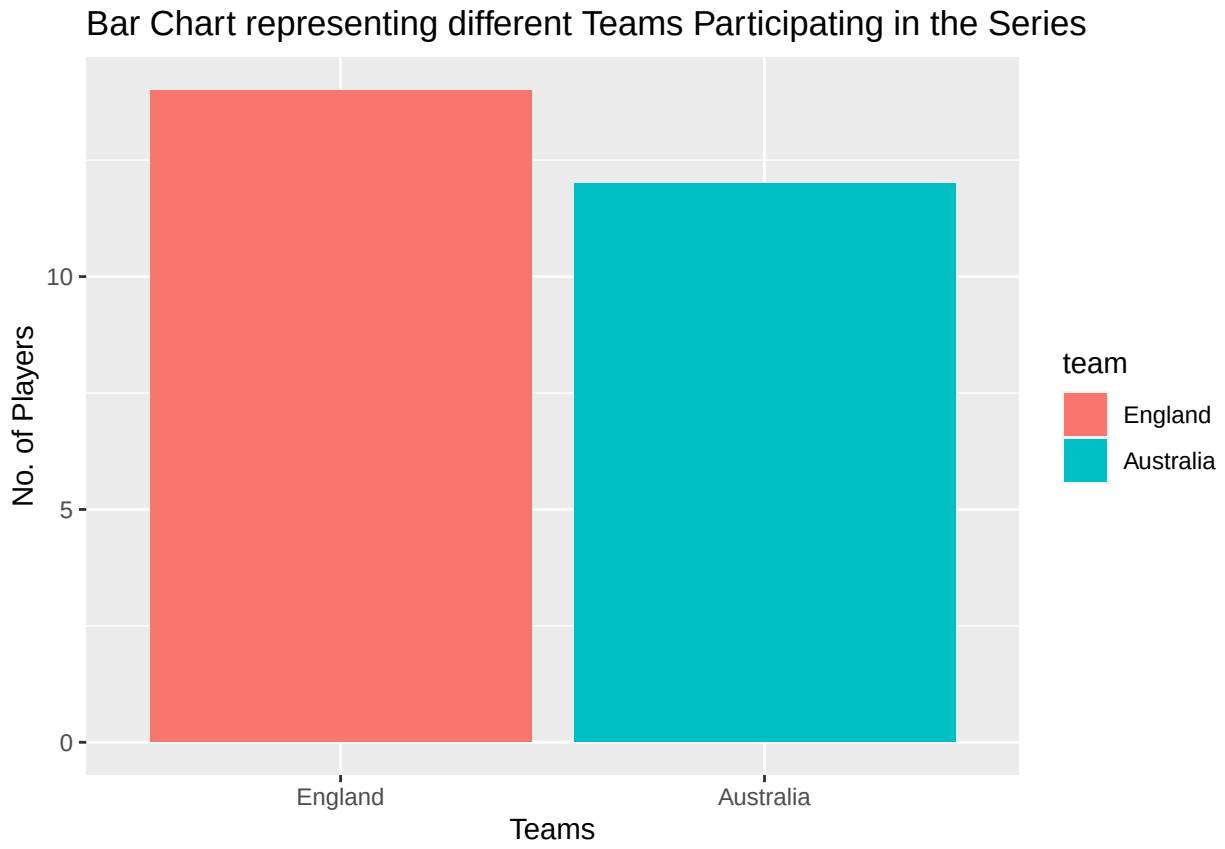
#Q 2b shape:unimodal,right-skewed outliers:- between 190-220 spread :- range lies between 0 to 220 location:- The peak is between 0 to 10

```
#Q2 c
sum_players <- ashes_tidy %>%
  distinct(batter,team) %>%
  group_by(team) %>%
  summarise(players=n())

sum_players
```

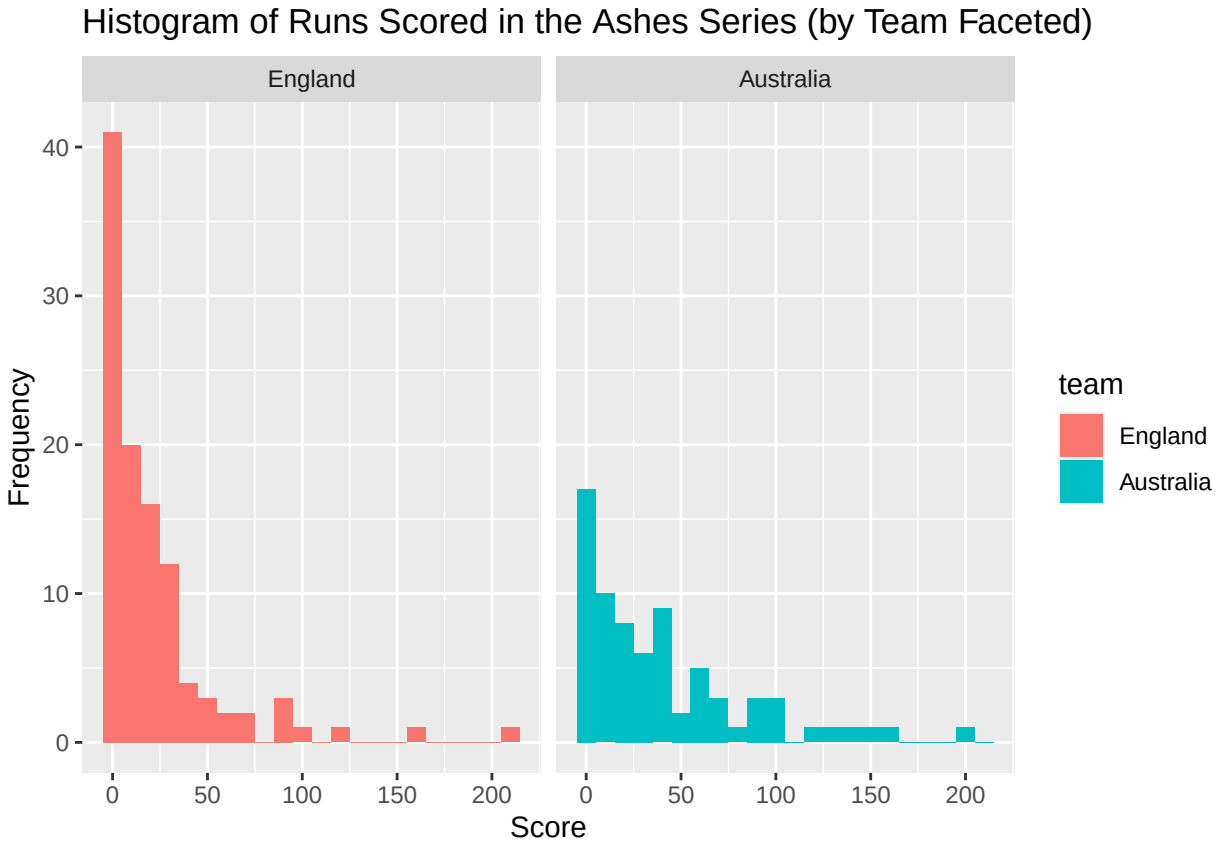
```
## # A tibble: 2 x 2
##   team      players
##   <fct>       <int>
## 1 England        14
## 2 Australia      12
```

```
ggplot(sum_players,aes(x=team,y=players, fill = team)) +
geom_bar(stat="identity") +
labs(title = "Bar Chart representing different Teams Participating in the Series", x =  "Teams", y = "N
```



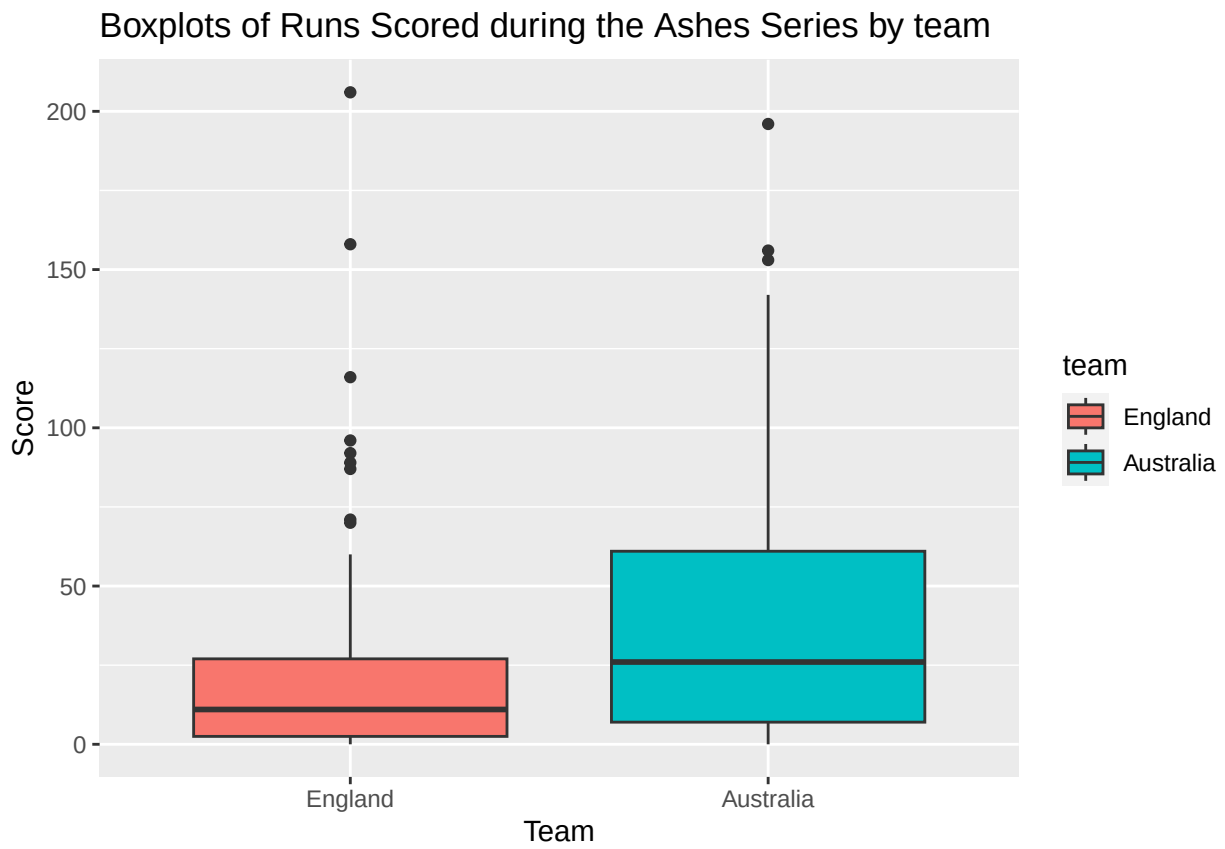

```
#Q3 a
ggplot(ashes_tidy, aes(x = score, fill = team)) +
geom_histogram(position = "identity",binwidth = 10) +
labs(title = "Histogram of Runs Scored in the Ashes Series (by Team Faceted)",
x = "Score",
y = "Frequency") +
facet_wrap(~team)
```

```
## Warning: Removed 80 rows containing non-finite values (‘stat_bin()‘).
```




```
# Q3 b
ggplot(ashes_tidy, aes(x = team, y = score, fill = team)) +
geom_boxplot() +
labs(title = "Boxplots of Runs Scored during the Ashes Series by team",
x = "Team",
y = "Score")
```

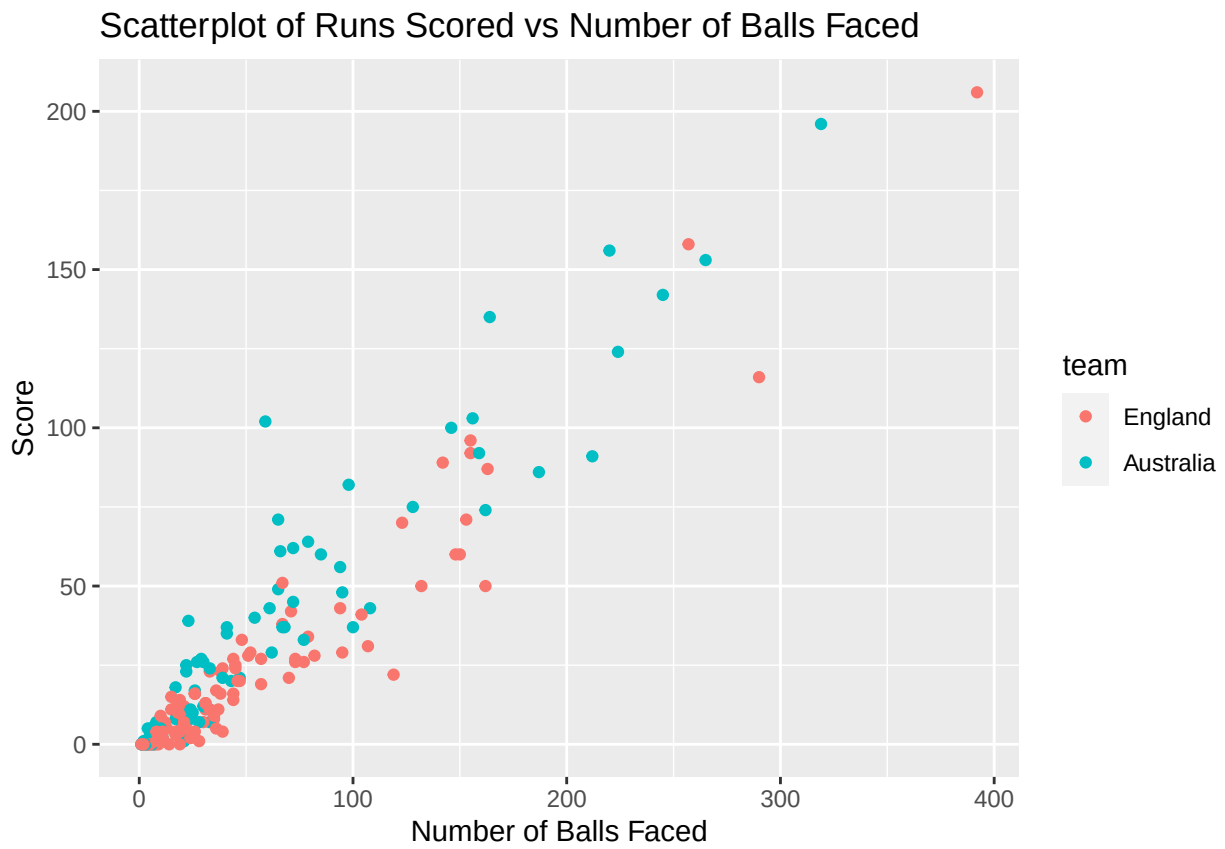
```
## Warning: Removed 80 rows containing non-finite values (‘stat_boxplot()‘).
```



Shape: The distribution of scores in Australia seems to be right - skewed . The amount of low scores are more as compared to less high scores. In the case of box plot , the box is slightly right-skewed distribution. Now talking about England , the distribution for England is also same as Australia , that is right skewed. Location:- Australia distribution according to the histogram and boxplot is around 20 to 30 runs Location :- Once again same conclusion can be made , that is the center of the distribution for England is also around 20 to 30 runs Spread: Australia distribution has a wider spread as shown in histogram , displaying a high range of scores spread across. England on the other hand also have a wide spread , which is evident by observing both of the plots. This means just like Australia , England too has variety of scores. Outliers: Both Australia and England are displaying outliers in high scores which can be seen when referring the box plots . Conclusion :- According to my Analysis , what i have discovered is that both teams have very much similar variability in scores , but England seems to have a bit lower variability then Australia. Another conclusion that i was able to make was both the teams have a right-skewed distribution accompanied by wide spread of sources and outliers.

```
# Q 4A
ggplot(ashes_tidy, aes(x = balls, y = score, color = team)) +
geom_point() +
labs(title = "Scatterplot of Runs Scored vs Number of Balls Faced",
x = "Number of Balls Faced",
y = "Score")
```

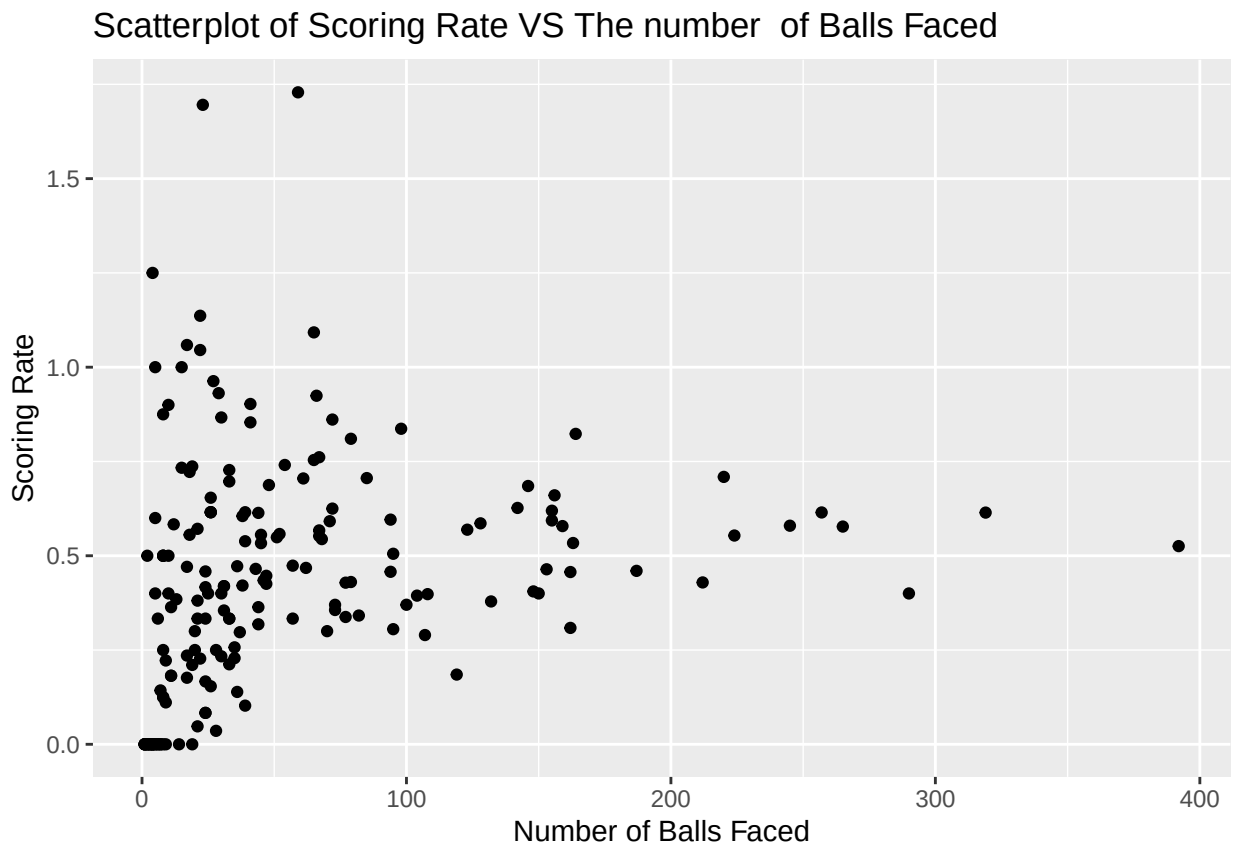
```
## Warning: Removed 80 rows containing missing values (`geom_point()`).
```



Q4 B The conclusions that can be made after observing the scatterplot is , a positive relationship can be seen between score and the number of balls the batsman faced. second conclusion that i was able to identify was , if we ignore few outliers in the case of Australia , it is highly possible for the players had faced more balls in order to score more runs

```
ashes_tidy <- ashes_tidy %>%
mutate(scoring_rate = score / balls)
ggplot(ashes_tidy, aes(x = balls, y = scoring_rate)) +
geom_point() +
labs(title = "Scatterplot of Scoring Rate VS The number  of Balls Faced",
x = "Number of Balls Faced",
y = "Scoring Rate")
```

```
## Warning: Removed 80 rows containing missing values (‘geom_point()‘).
```

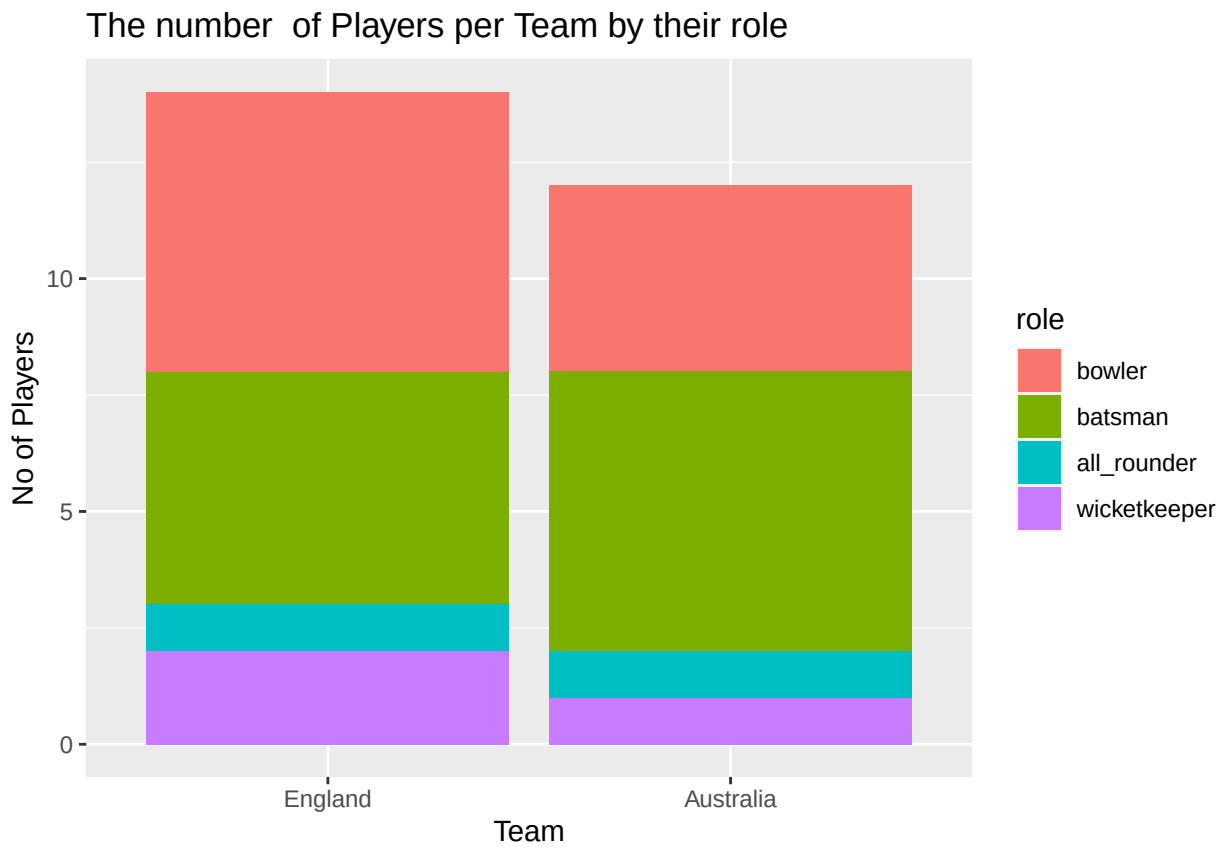


#Q4 d The scatterplot shown above shows us a mixed relationship between the scoring rate on y-axis and the number of balls faced by the batsman on the x-axis. If observed seriously, we can also observe there is no clear trend and the players who were facing more balls are not scoring more runs quickly and the players who are facing less balls aren't scoring slowly .

```
player_details <- ashes_tidy %>%
distinct(batter, team, role) %>%
group_by(team, role) %>%
summarise(players= n())
```

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

```
ggplot(player_details, aes(x = team, y = players, fill = role)) +
geom_bar(stat = "identity") +
labs(title = "The number  of Players per Team by their role",
x = "Team",
y = "No of Players")
```




```
contingency_table <- ashes_tidy$role %>%
table(ashes_tidy$team) %>%
prop.table()
contingency_table
```

```
##
## .                England  Australia
##   bowler       0.23076923 0.15384615
##   batsman      0.19230769 0.23076923
##   all_rounder  0.03846154 0.03846154
##   wicketkeeper 0.07692308 0.03846154
```

With the help of the above figure, It is very obvious that Australia mainly consist of batsman , but when it comes to all rounder , both the teams share equal proportions.