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Now, we are interested in plotting the evolution of the Adolescent Fertility Rate from 1960 to 2014. In addition, we are interested in having different information displayed in the same plot. First, we want to plot the sample mean of for the entire sample in the data set, but we also want to add more information such as the rate for low, middle and high income countries.

Someone has written the following R code to create a matrix with the information that is required for the plot. However, as you can see, we are missing some information that we need to be able to run it. Therefore, we need your help! We want to have a matrix whose first rows correspond to the years, and the next rows to the average rate for low income, middle, and high income countries, respectively. Here is the code and the missing pieces:

Finger Exercises due Oct 17, 2016 at 05:00 IST

Module 3: Homework
Homework due Oct 10, 2016 at 05:00 IST

- Exit Survey

```
#Plotting the mean, and the value for low income, middle income, and
high income countries
low_income <- subset(teenager_fr, Country.Code == "□" )
middle_income <- subset(teenager_fr, Country.Code == "MIC")
high_income <- subset(teenager_fr, Country.Code == "HIC")

plot_frame <- matrix(NA, □, 55)
for (i in 5:59){
  k <- i - 4
  j <- i + □
  plot_frame[1, k] <- j
  plot_frame[2, k] <- mean(teenager_fr[, i], na.rm = □)
  plot_frame[3, k] <- low_income[, i]
  plot_frame[4, k] <- □ [, i]
  plot_frame[5, k] <- high_income[, i]
}
```

Question 8

(1/1 point)
Which of the following options can be used to fill in the blanks above in order to achieve our goal?

- a. LIC; 4; 1955; FALSE; middle_income
- b. OEDC; 3; 1956; TRUE; middle_income
- c. LIC; 5; 1955; FALSE; middle_income

- d. LIC; 5; 1955; TRUE; middle_income ✔
- e. MIC; 5; 1956; TRUE; middle_income
- f. MIC; 4; 1955; TRUE; middle_income

EXPLANATION

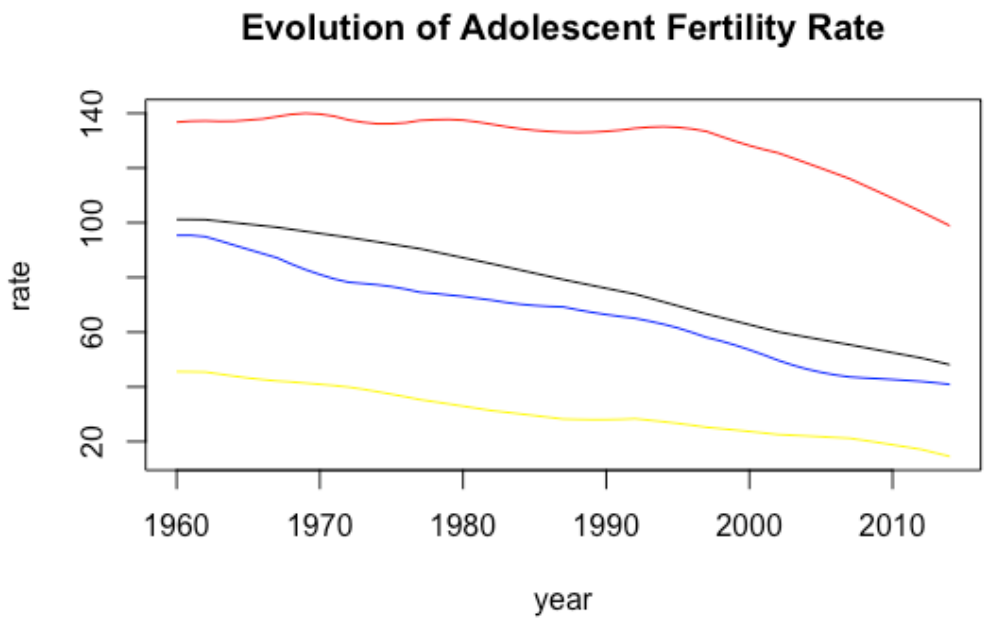
The code for low income countries in the data set is LIC; since we are constructing a matrix for the plot, we will need 5 rows; the first year in the plot is 1960, since the loop starts with i = 5, we need to add 1955 to get that number; we should remove missing values from the calculation so that option has to be set to true. The last option is the same for all the answers, in the 4th row of our matrix we want to have the information for middle income countries

You have used 1 of 2 submissions

Question 9

(1/1 point)

Now that we have our matrix, we can use it to construct our plot. Once we ran the code, we produced the following graph:



However, we have a problem! There is no legend in the figure, and we don't know which line corresponds to each category that we were trying to plot. Can you help us to figure out which of the following codes will produce this figure?

a.
```
xlim <- range(c(plot_frame[1,]))
ylim    <-    range(c(plot_frame[2,],    plot_frame[3,],
plot_frame[4,], plot_frame[5,]))
plot(plot_frame[1,], plot_frame[2,], type = "l", col =
"black" xlim=xlim, ylim=ylim,
     main = "Evolution of Adolescent Fertility Rate",
xlab = "year", ylab = "rate")
lines(plot_frame[1,], plot_frame[3,], col = "red")
lines(plot_frame[1,], plot_frame[4,], col = "yellow")
lines(plot_frame[1,], plot_frame[5,], col = "blue")
```

b.
```
xlim <- range(c(plot_frame[1,]))
ylim    <-    range(c(plot_frame[2,],    plot_frame[3,],
plot_frame[4,], plot_frame[5,]))
plot(plot_frame[1,], plot_frame[2,], type = "l", col =
"blue" xlim=xlim, ylim=ylim,
     main = "Evolution of Adolescent Fertility Rate",
xlab = "year", ylab = "rate")
lines(plot_frame[1,], plot_frame[3,], col = "yellow")
lines(plot_frame[1,], plot_frame[4,], col = "black")
lines(plot_frame[1,], plot_frame[5,], col = "red")
```

c.
```
xlim <- range(c(plot_frame[1,]))
ylim    <-    range(c(plot_frame[2,],    plot_frame[3,],
plot_frame[4,], plot_frame[5,]))
plot(plot_frame[1,], plot_frame[2,], type = "l", col =
"yellow" xlim=xlim, ylim=ylim,
     main = "Evolution of Adolescent Fertility Rate",
xlab = "year", ylab = "rate")
lines(plot_frame[1,], plot_frame[3,], col = "blue")
lines(plot_frame[1,], plot_frame[4,], col = "red")
lines(plot_frame[1,], plot_frame[5,], col = "black")
```

d.
```
xlim <- range(c(plot_frame[1,]))
ylim    <-    range(c(plot_frame[2,],    plot_frame[3,],
plot_frame[4,], plot_frame[5,]))
plot(plot_frame[1,], plot_frame[2,], type = "l", col =
"black" xlim=xlim, ylim=ylim,
     main = "Evolution of Adolescent Fertility Rate",
xlab = "year", ylab = "rate")
lines(plot_frame[1,], plot_frame[3,], col = "red")
lines(plot_frame[1,], plot_frame[4,], col = "blue")
lines(plot_frame[1,], plot_frame[5,], col = "yellow")
```

EXPLANATION

You can solve the question either by analyzing the trends or by running the different codes in R. In general, it is expected to have that low income countries have higher rates. Thus they are represented by the red line, high income countries have the lowest rate and then they should be the yellow line. Between the black and the blue line you should run the code in R and figure out which is which.

You have used 1 of 2 submissions

Question 10

(0.5/1 point)

Which of the following statements can you conclude from the plot? (Select all that apply)

- [ ] a. Using all the data, the average of the rate is always below the rate of high and middle income countries, and below the one for low income countries.
- [x] b. While the rate for high income countries has presented a decreasing trend for the entire period, the rate for low income countries is barely steady until the mid-nineties. From there onwards, the rate decreased drastically.
- [x] c. The gap between high and middle income countries is lower in 2014 than in 1960, while the gap between low and middle income countries is actually larger.
- [x] d. Since the mid-nineties the rate for low income countries has decreased more than the rate for high and middle income countries.

✔

You have used 1 of 2 submissions