Assignment 3

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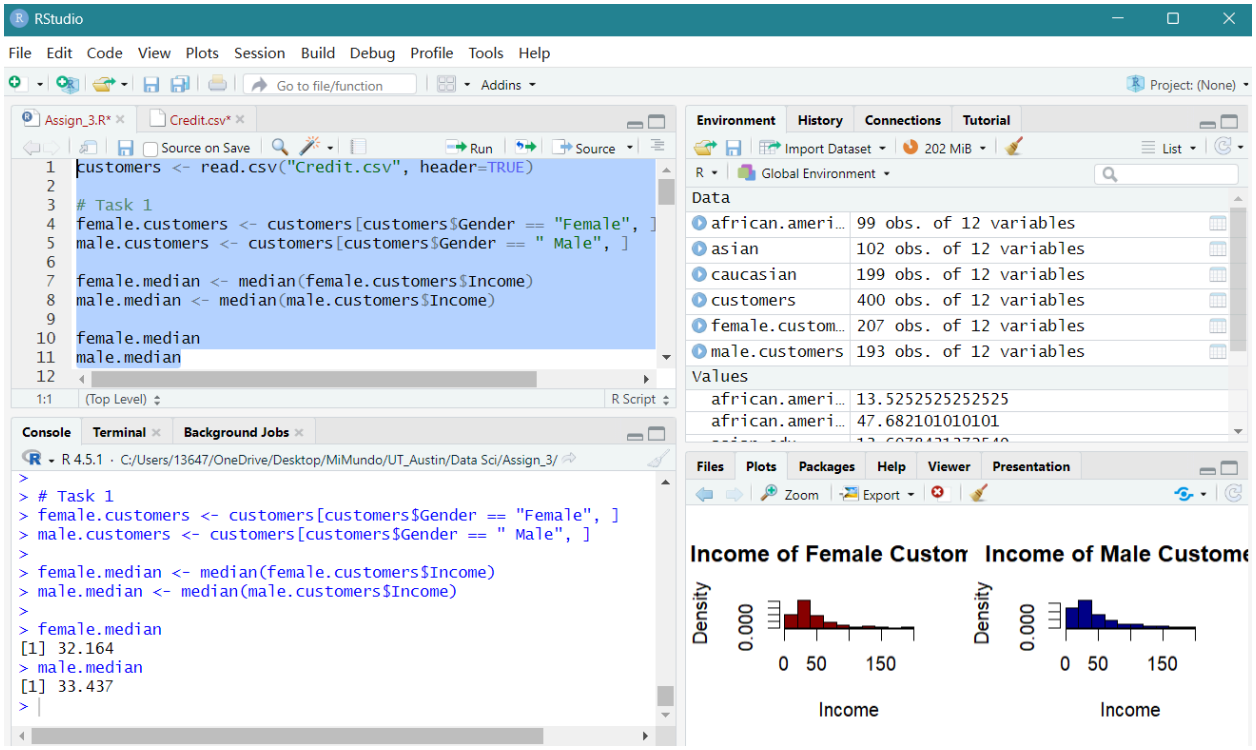
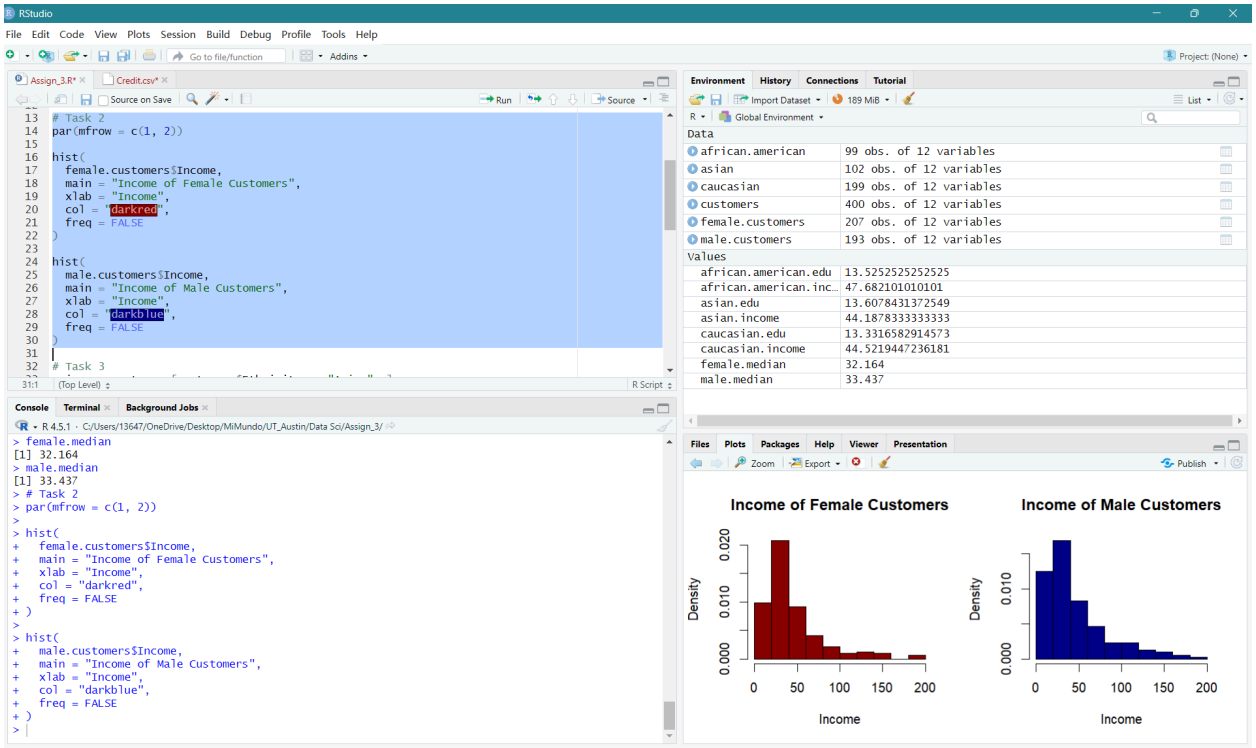
Task 1: Calculate the median income for male and female customers in the dataset. Is there a difference between the two groups in this sample dataset?



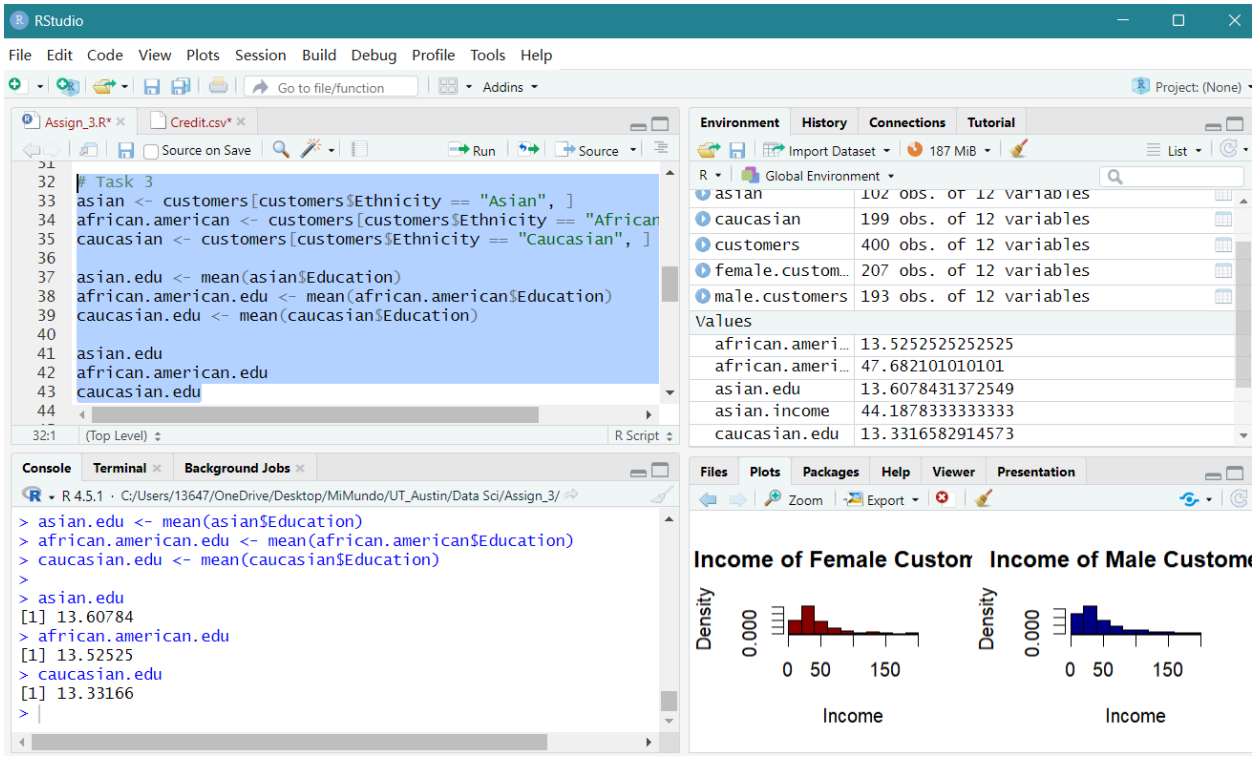
As we can see from the console, the median of male customers is 33.437, and the median of female customers is 32.164. Obviously, there is a difference between male customers and female customers. Male customers have a higher income median and the female customers have a lower income median.

Task 2: Create separate histograms showing the income distribution for male and female customers. Compare the two histograms and interpret your findings.



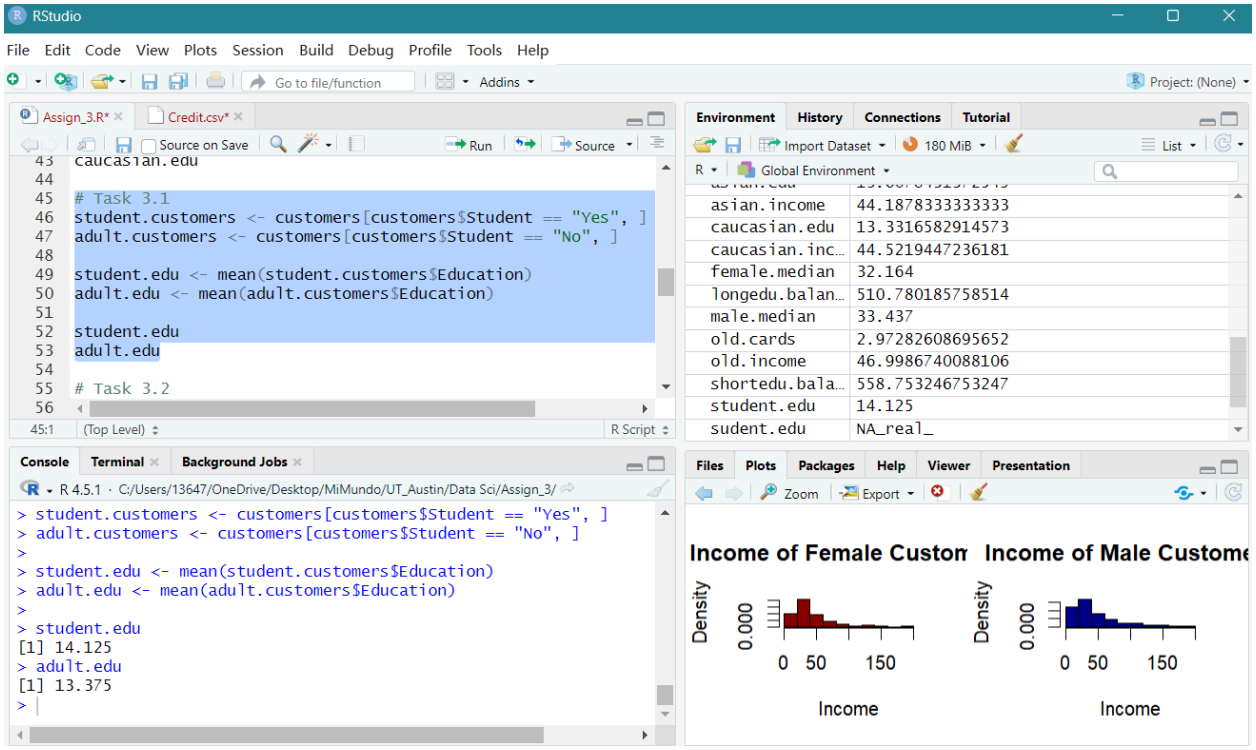
Above is the income histogram for the male and female customers respectively. As we can see from the histogram, female customers' income distribution are more centralized towards 25-50, and male customers' income distribution are more centralized towards 25-50 as well. But the lower income proportion of male are more significant as well, in other words, male customers' distribution are smoothier.

Task 3: Do different ethnic groups in the dataset have different average education levels?



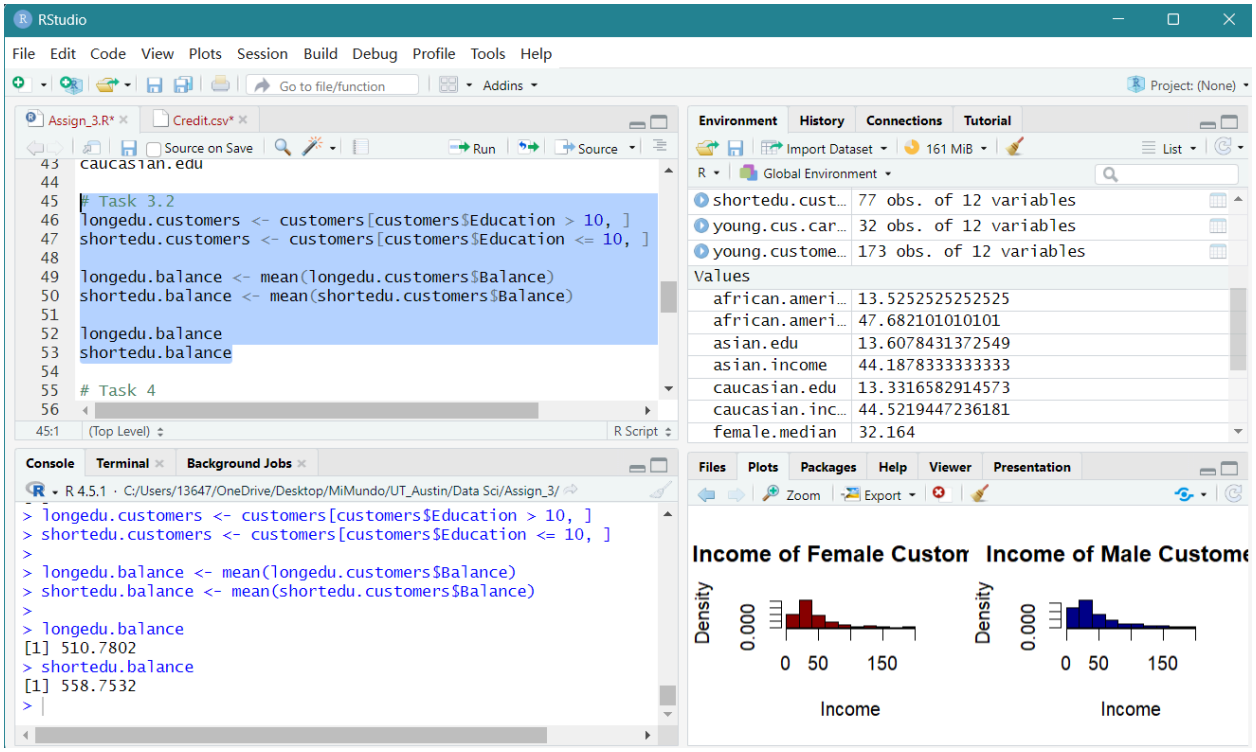
Yes, different ethnic groups have different education levels.

Task 3.1: Do Students have a higher number of Education years?



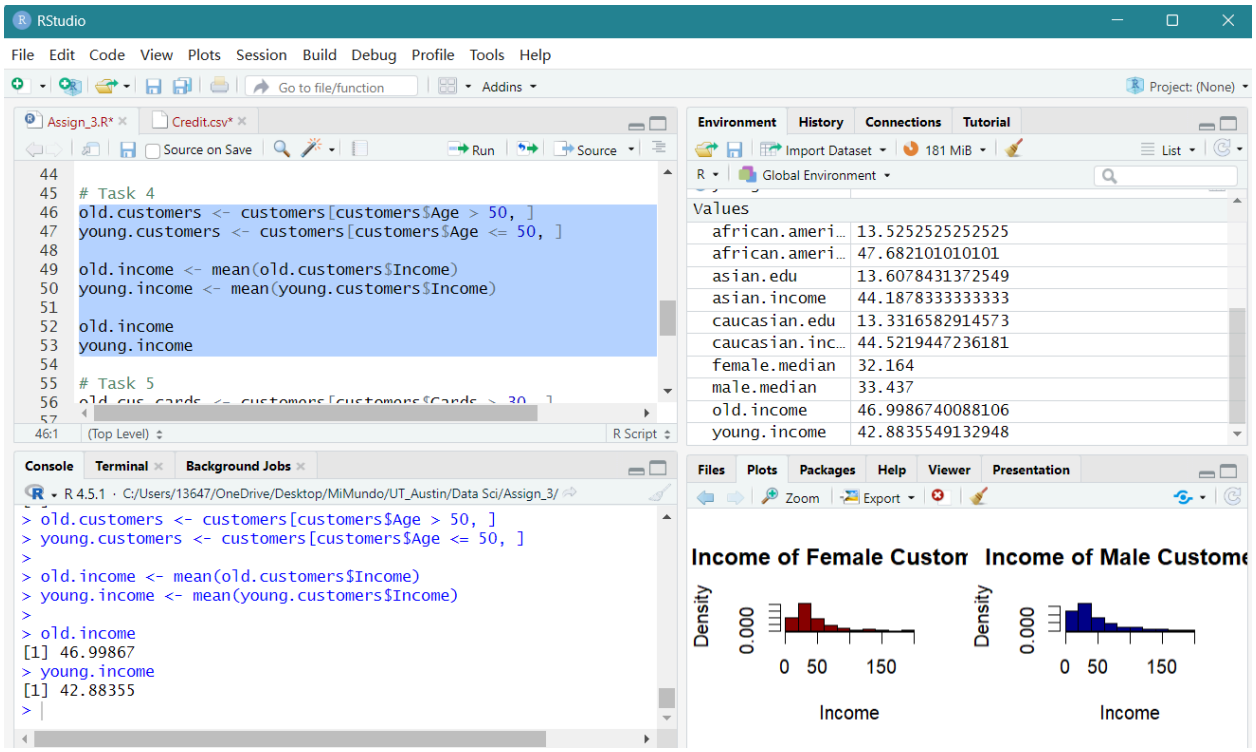
According to the output, students' average education years are 14.125, and adults' education years are 13.375. Obviously, students have a higher number of education years.

Task 3.2: Do People with more than 10 years of education have a higher balance on their account?



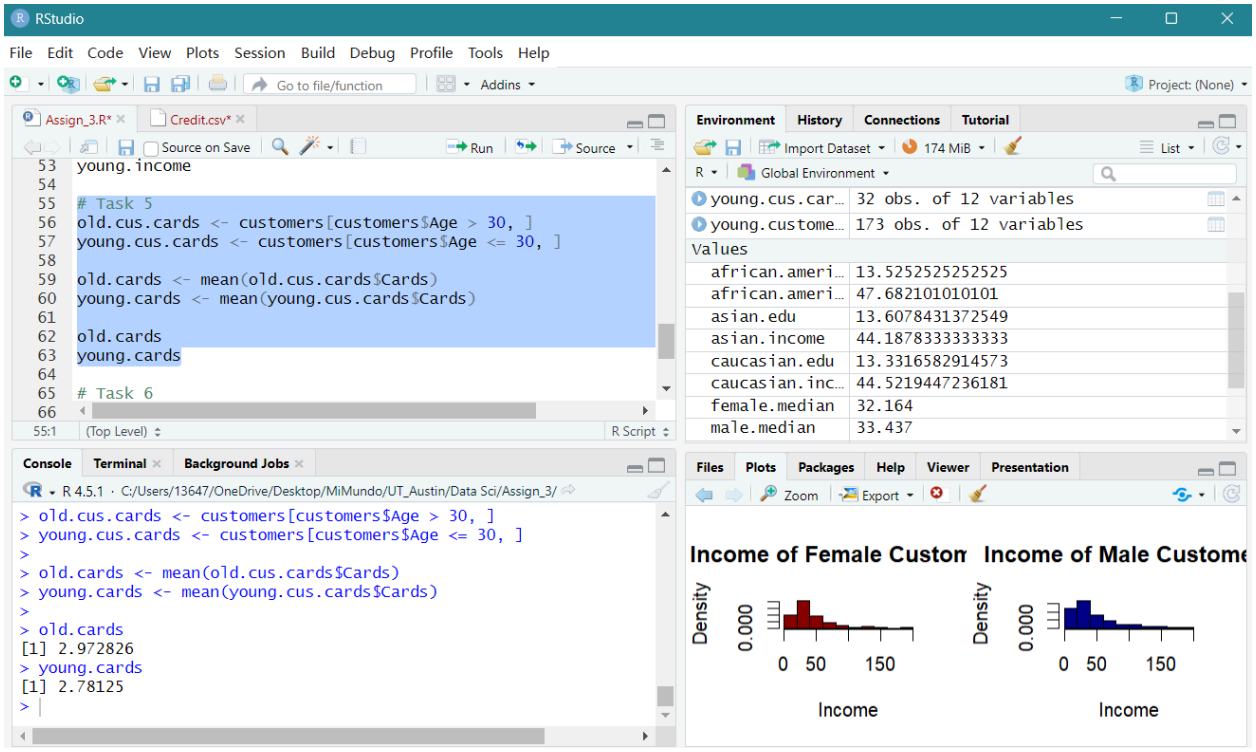
According to the output, people with more than 10 years of education do not have a higher balance on their account.

Task 4: Do people older than 50 years have a higher average income compared to the rest of the dataset?



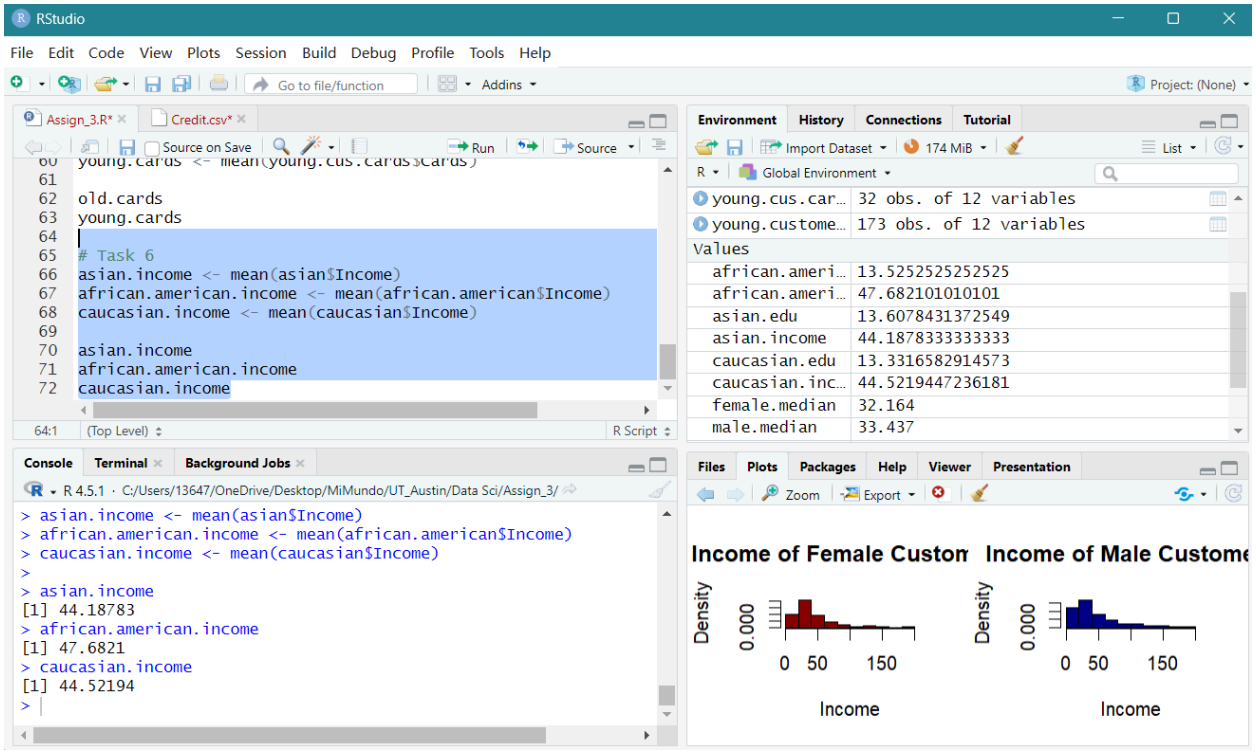
According to the output in the console, I would like to say, YES!

Task 5: Do people younger than 30 years old have more credit cards on average?



According to the output in the console, people younger than 30 years old have less credit cards on average.

Task 6: Do different ethnic groups have different average incomes?



According to the output, different ethnic groups do have different average incomes. For Asians, 44.18783; For African Americans, 47.6821; For Caucasians, 44.52194.