INSTITUTO TECNOLÓGICO Y DE ESTUDIOS SUPERIORES DE MONTERREY

CAMPUS CIUDAD DE MÉXICO

How was LEGO affected by Covid-19?

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Business Programming

Group: 001

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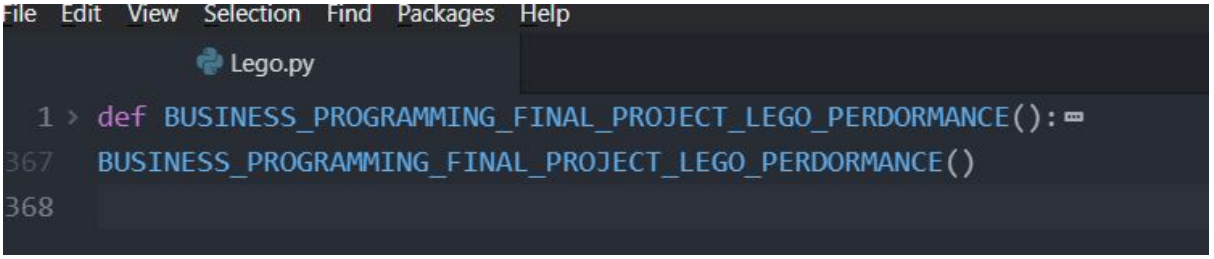
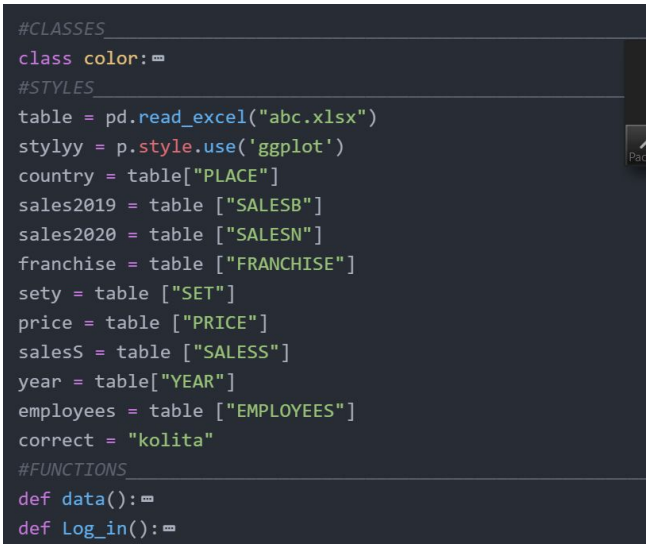
FINAL STEPS - BUSINESS PROGRAMMING

FIRST FUNCTIONS, THE WHOLE PROGRAM IS STORED THERE





STATS DATA CODING

```
def data():
    def stats():
        #--------CODE
        #--------2019 (SALES PER COUNTRY)
        LATobtain2019 = table.groupby("AREA").get_group("LAT")
        LAT2019 = LATobtain2019["SALESB"]
        AvSales2019 = LAT2019.mean()
        MaxCountry_Sales2019 = np.max(sales2019)
        MinCountry_Sales2019 = np.min(sales2019)
        MeanGlobCountries2019 = st.mean(sales2019)
        StdGlobCountries2019 = st.stdev(sales2019)
        #--------2020 (SALES PER COUNTRY)
        LATobtain2020 = table.groupby("AREA").get_group("LAT")
        LAT2020 = LATobtain2020["SALESN"]
        AvSales2020 = LAT2020.mean()
        MaxCountry_Sales2020 = np.max(sales2020)
        MinCountry_Sales2020 = np.min(sales2020)
        MeanGlobCountries2020 = st.mean(sales2020)
        StdGlobCountries2020 = st.stdev(sales2020)
        #--------2019 (SET PRICES AND SALES)
        Max_F_Price = np.max(price)
        MaxQuantitySales = np.max(salesS)
        MinQuantitySales = np.min(salesS)
        StdevPrices = st.stdev(price)
        AvSales_F = st.mean(salesS)
        #-------EMPLOYEES
        MaxEmployees = np.max(employees)
        MinEmployees = np.min(employees)
        MeanEmployes = st.mean(employees)
```

STATS DATA DISPLAYED

```
#--------DISPLAY
#--------INTRODUCTION
print(color.BOLD+color.GREEN+"Hey, here you will find some stats abourt Lego's performance during 2019 and 2020, check them out"+color.END)
ent1 = input(color.BOLD+color.GREEN+"Please, click enter to coninue"+color.END)

#--------2019 (SALES PER COUNTRY DISPLAYED)
ent2 = input(color.BOLD+color.CYAN+"In this first section you will appreciate data about the Sales of the company in different countries in 2019"+color.END)
print(color.BOLD+"First of all, let's analyze the average sales in Latinoamerica"+color.END)
ent3 = input(f"--Lego had {AvSales2019} average sales in Latinoamerica during 2019")
ent4 = input(color.BOLD+"Now, let's see data of their sales all around the globe, covering 34 countries"+color.END)
print("--Lego had a max sales number of",MaxCountry_Sales2019)
print("--Lego had a min sales number of",MinCountry_Sales2019)
print("--Also, talking about the Global Sales Average, the company achieved an amazing number of",MeanGlobCountries2019,"per country")
ent4 = input(f"--Finally, the standad deviation of their sales Worldwide was {StdGlobCountries2019}")

#--------2020 (SALES PER COUNTRY DISPLAYED)
ent5 = input(color.BOLD+color.CYAN+"In this second section you will appreciate data about the Sales of the company in different countries in 2020"+color.END)
print(color.BOLD+"First of all, let's analyze the average sales in Latinoamerica"+color.END)
ent6 = input(f"--Lego had {AvSales2020} average sales in Latinoamerica during 2019")
ent7 = input(color.BOLD+"Now, let's see data of their sales all around the globe, covering 34 countries"+color.END)
print("--Lego had a max sales number of",MaxCountry_Sales2020)
print("--Lego had a min sales number of",MinCountry_Sales2020)
print("--Also, talking about the Global Sales Average, the company achieved an amazing number of",MeanGlobCountries2020,"per country")
ent8 = input(f"--Finally, the standad deviation of their sales Worldwide during 2020 was {StdGlobCountries2020}")

#--------2020 (SET PRICES AND SALES DISPLAYED)
ent9 = input(color.BOLD+color.CYAN+"Excellent, now click enter to display information about the performance of Lego franchises from June 2019 to July 2020"+color.END)
print("--The max price lego had from a product was", Max_F_Price)
print("--The company had an amazing number of sales of", MaxQuantitySales)
print("--Lego had an standard deviation in their 2020 prices", StdevPrices)
print("--The average of Lego sales in 12 months of operation was", AvSales_F)
ent10 = input(f"--The lower sales number was of {MinQuantitySales}")

#-------Employees
ent11 = input(color.BOLD+color.CYAN+"Now let's display some data about the employees from January 2018 to October 2020"+color.END)
print("--The HIGHEST number of employees on a working month in Lego was", MaxEmployees)
print("--The MINIMUM number of employees on a working month in Lego was", MinEmployes)
ent12 = input(f"--THE AVERAGE number of employees in lego since January 2018 to the present day is {MeanEmployes}")

#--------CONCLUSION
print(color.BOLD+color.GREEN+"Excellent"+color.END, color.BOLD+"That was the first part of Lego's data"+color.END)
print("Are you willing to continue?")
continue_1 = input(color.BOLD+color.RED+"YES or NO ----->"+color.END)
if continue_1 == "YES":
    graphs()
    print(table)
elif continue_1 != "YES":
    print(color.BOLD+color.GREEN+"Thank you, you can check data again by typing the correct password"+color.END)
    Log_in()
```

1st GRAPH

```
def graphs():
    def first_graph():
        #FRANCHISES SALES GRAPH ONE
        p.subplot(221)
        p.xlabel("lego Franchises")
        p.ylabel("Sales 2020")
        p.title("What franchise is having more sales during this year?")
        barlist=p.bar(franchise,salesS)
        barlist[0].set_color("#18cdec")
        barlist[1].set_color("#03ab96")
        barlist[2].set_color("#008ba3")
        barlist[3].set_color("#1894ec")
        barlist[4].set_color("#1861ec")
        barlist[5].set_color("#18cdec")
        barlist[6].set_color("#03ab96")
        barlist[7].set_color("#008ba3")
        barlist[8].set_color("#1894ec")
        barlist[9].set_color("#1861ec")
        barlist[10].set_color("#18cdec")
        barlist[11].set_color("#03ab96")
        barlist[12].set_color("#008ba3")
        barlist[13].set_color("#1894ec")
        barlist[14].set_color("#1861ec")
        barlist[15].set_color("#18cdec")
        barlist[16].set_color("#03ab96")
        barlist[17].set_color("#008ba3")
        barlist[18].set_color("#1894ec")
        barlist[19].set_color("#1861ec")
        barlist[20].set_color("#18cdec")
        barlist[21].set_color("#03ab96")
        barlist[22].set_color("#008ba3")
        barlist[23].set_color("#1894ec")
        barlist[24].set_color("#1861ec")
        barlist[25].set_color("#18cdec")
        barlist[26].set_color("#03ab96")
        barlist[27].set_color("#008ba3")
        barlist[28].set_color("#1894ec")
        barlist[29].set_color("#1861ec")
        barlist[30].set_color("#18cdec")
        barlist[31].set_color("#03ab96")
        barlist[32].set_color("#008ba3")
        barlist[33].set_color("#1894ec")
        p.xticks(rotation = 85)
```

2ND GRAPH

```
#CONTRY SALES GRAPH ONE
    p.subplot(222)
    p.xlabel("Country")
    p.ylabel("Sales 2020")
    p.title("What country is having more lego sales during this year?")
    barlist2=p.bar(country,sales2020)
    barlist2[0].set_color("#18cdec")
    barlist2[1].set_color("#03ab96")
    barlist2[2].set_color("#008ba3")
    barlist2[3].set_color("#1894ec")
    barlist2[4].set_color("#1861ec")
    barlist2[5].set_color("#18cdec")
    barlist2[6].set_color("#03ab96")
    barlist2[7].set_color("#008ba3")
    barlist2[8].set_color("#1894ec")
    barlist2[9].set_color("#1861ec")
    barlist2[10].set_color("#18cdec")
    barlist2[11].set_color("#03ab96")
    barlist2[12].set_color("#008ba3")
    barlist2[13].set_color("#1894ec")
    barlist2[14].set_color("#1861ec")
    barlist2[15].set_color("#18cdec")
    barlist2[16].set_color("#03ab96")
    barlist2[17].set_color("#008ba3")
    barlist2[18].set_color("#1894ec")
    barlist2[19].set_color("#1861ec")
    barlist2[20].set_color("#18cdec")
    barlist2[21].set_color("#03ab96")
    barlist2[22].set_color("#008ba3")
    barlist2[23].set_color("#1894ec")
    barlist2[24].set_color("#1861ec")
    barlist2[25].set_color("#18cdec")
    barlist2[26].set_color("#03ab96")
    barlist2[27].set_color("#008ba3")
    barlist2[28].set_color("#1894ec")
    barlist2[29].set_color("#1861ec")
    barlist2[30].set_color("#18cdec")
    barlist2[31].set_color("#03ab96")
    barlist2[32].set_color("#008ba3")
    barlist2[33].set_color("#1894ec")
    p.xticks(rotation = 75)
```

3RD GRAPH

```
#EMPLOYEES GRAPH ONE
    p.subplot(414)
    p.xlabel("Y")
    p.ylabel("Employees")
    p.title("What year Lego had more employees?")
    p.plot(year,employees,"cp-")
    p.xticks(rotation = 45)
    p.show()
    second_graph()
```

1stgraph

Sales franchises

2ndgraph

Sales2020Country

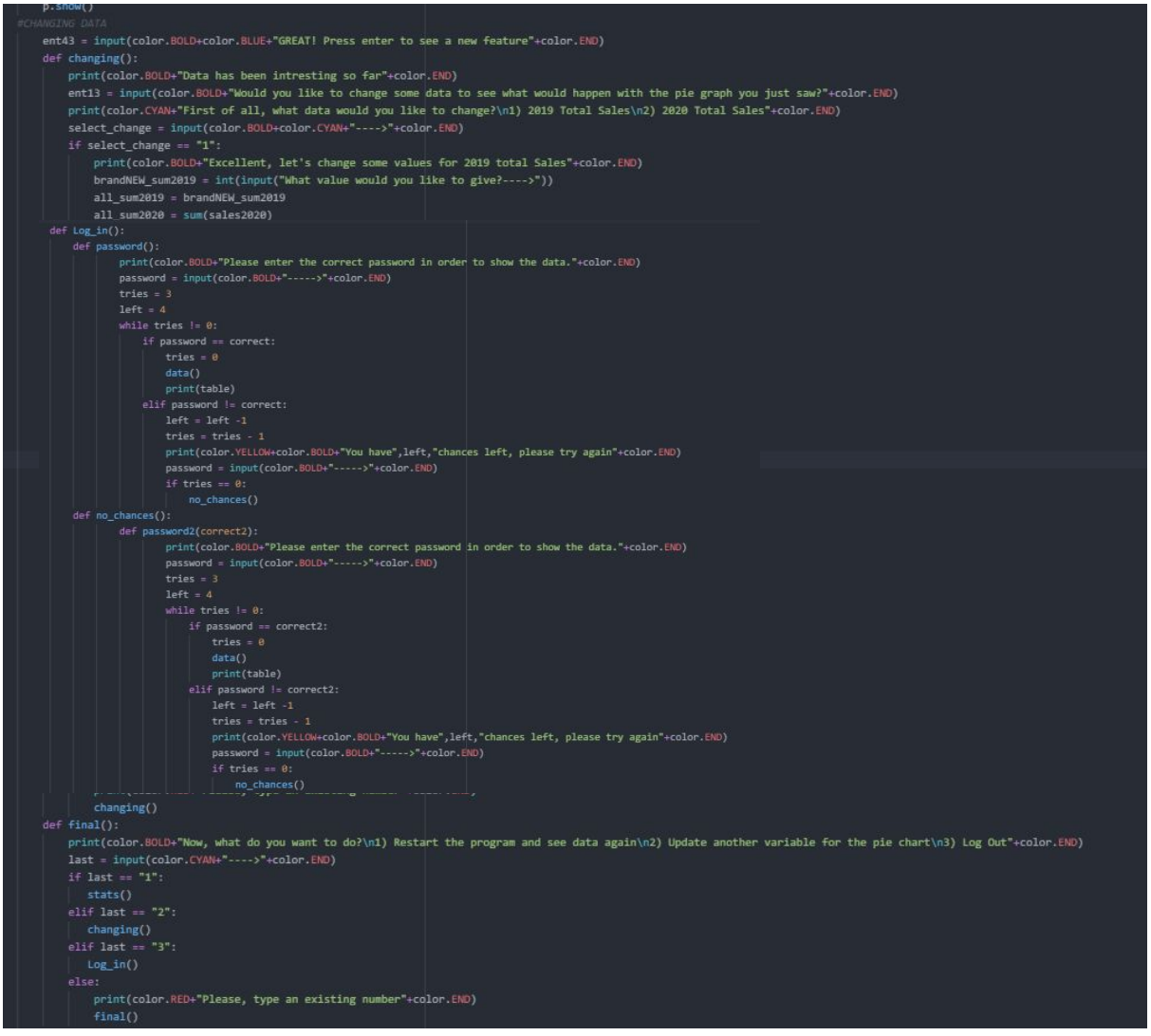
3rdgraph

Employees

4rd Graph (Displays a pie chart of the SALES relationship between 2019 and 2020)

```
def second_graph():
#SALES COMPARISON 2019 - 2020
    ent20 = input(color.BOLD+color.YELLOW+"Excellent! Press enter to display a pie chart, to appreciate the number of sales of 2019 vs 2020"+color.END)
    all_sum2019 = sum(sales2019)
    all_sum2020 = sum(sales2020)
```

Changing Values Function



```
    p.show()
#CHANGING DATA
    ent43 = input(color.BOLD+color.BLUE+"GREAT! Press enter to see a new feature"+color.END)
    def changing():
        print(color.BOLD+"Data has been intresting so far"+color.END)
        ent13 = input(color.BOLD+"Would you like to change some data to see what would happen with the pie graph you just saw?"+color.END)
        print(color.CYAN+"First of all, what data would you like to change?\n1) 2019 Total Sales\n2) 2020 Total Sales"+color.END)
        select_change = input(color.BOLD+color.CYAN+"---->"+color.END)
        if select_change == "1":
            print(color.BOLD+"Excellent, let's change some values for 2019 total Sales"+color.END)
            brandNEW_sum2019 = int(input("What value would you like to give?---->"))
            all_sum2019 = brandNEW_sum2019
            all_sum2020 = sum(sales2020)
     def Log_in():
         def password():
                print(color.BOLD+"Please enter the correct password in order to show the data."+color.END)
                password = input(color.BOLD+"----->"+color.END)
                tries = 3
                left = 4
                while tries != 0:
                    if password == correct:
                        tries = 0
                        data()
                        print(table)
                    elif password != correct:
                        left = left -1
                        tries = tries - 1
                        print(color.YELLOW+color.BOLD+"You have",left,"chances left, please try again"+color.END)
                        password = input(color.BOLD+"----->"+color.END)
                        if tries == 0:
                            no_chances()
         def no_chances():
                def password2(correct2):
                        print(color.BOLD+"Please enter the correct password in order to show the data."+color.END)
                        password = input(color.BOLD+"----->"+color.END)
                        tries = 3
                        left = 4
                        while tries != 0:
                            if password == correct2:
                                tries = 0
                                data()
                                print(table)
                            elif password != correct2:
                                left = left -1
                                tries = tries - 1
                                print(color.YELLOW+color.BOLD+"You have",left,"chances left, please try again"+color.END)
                                password = input(color.BOLD+"----->"+color.END)
                                if tries == 0:
                                    no_chances()
            changing()
    def final():
        print(color.BOLD+"Now, what do you want to do?\n1) Restart the program and see data again\n2) Update another variable for the pie chart\n3) Log Out"+color.END)
        last = input(color.CYAN+"---->"+color.END)
        if last == "1":
            stats()
        elif last == "2":
            changing()
        elif last == "3":
            Log_in()
        else:
            print(color.RED+"Please, type an existing number"+color.END)
            final()
```

LOG_IN FUNCTION

RESET PASSWORD FUNCTION

```
            def questions():
                print(color.RED+"you have no chances left, sorry bro :("+color.END)
                print("If you want to try recovering your password type YES")
                recover = input(color.YELLOW+"----->"+color.END)
                if recover == "YES":
                    print(color.BLUE+"Please choose the security question you want to answer\n1)\n2)\n3)"+color.END)
                    question = input(color.YELLOW+"---->"+color.END)
                    if question == "1":
                        print("What's Paola surname?")
                        Ps = input(color.YELLOW+"----->"+color.END)
                        if Ps == "Bazán":
                            correct2 = input(color.YELLOW+"Please reset your password"+color.END)
                            tries = 3
                            password2(correct2)
                        else:
                            print("Your answer was incorrect, sorry the data will be protected")
                    elif question == "2":
                        print("What's Camila hair color?")
                        Ch = input(color.YELLOW+"----->"+color.END)
                        if Ch == "Yellow":
                            correct2 = input(color.YELLOW+"Please reset your password"+color.END)
                            tries = 3
                            password2(correct2)
                        else:
                            print("Your answer was incorrect, sorry the data will be protected")
                    elif question == "3":
                        print("What's Daniel favourite play?")
                        Dm = input(color.YELLOW+"----->"+color.END)
                        if Dm == "Hamilton":
                            correct2 = input(color.YELLOW+"Please reset your password"+color.END)
                            tries = 3
                            password2(correct2)
                        else:
                            print("Your answer was incorrect, sorry the data will be protected")
                    else:
                        print("The number you typed is incorrect, try again")
                        question = input(color.YELLOW+"---->"+color.END)
                else:
                    print("Ok, the program will be closed and data will be protected")
            questions()
    password()
```

REFERENCES:

The LEGO Group. (2019). The LEGO Group Annual Report 2019. 19.10.2020, de LEGO Retrieved from: https://www.lego.com/cdn/cs/aboutus/assets/blt55a9aaa4253b2fa5/Annual_Report_2019_ENG.pdf.pdf