E-Commerce product price tracking

Group Name: Python warriors

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Abstract

This project aims to help users receive an email alert when the price of the e-commerce product from amazon, Flipkart, MI and one plus drops below the mentioned threshold value. The script will take product URL, expected price and email id as inputs and using chrome browser, python, selenium and SMTP email packages, python will check the price of a given product at regular intervals and send an alert email if a price drops below the expected value.

Introduction

Have you ever thought about the price of a camera you are trying to buy via amazon gets fluctuated time by time. Consider, you might be observing a product at Flipkart for a price of 1000 rupees but you know it will fall down due to some season sales but you don't know the time when the price drops. So, our program is the solution to the above-mentioned problem (buying at a better price).

Method

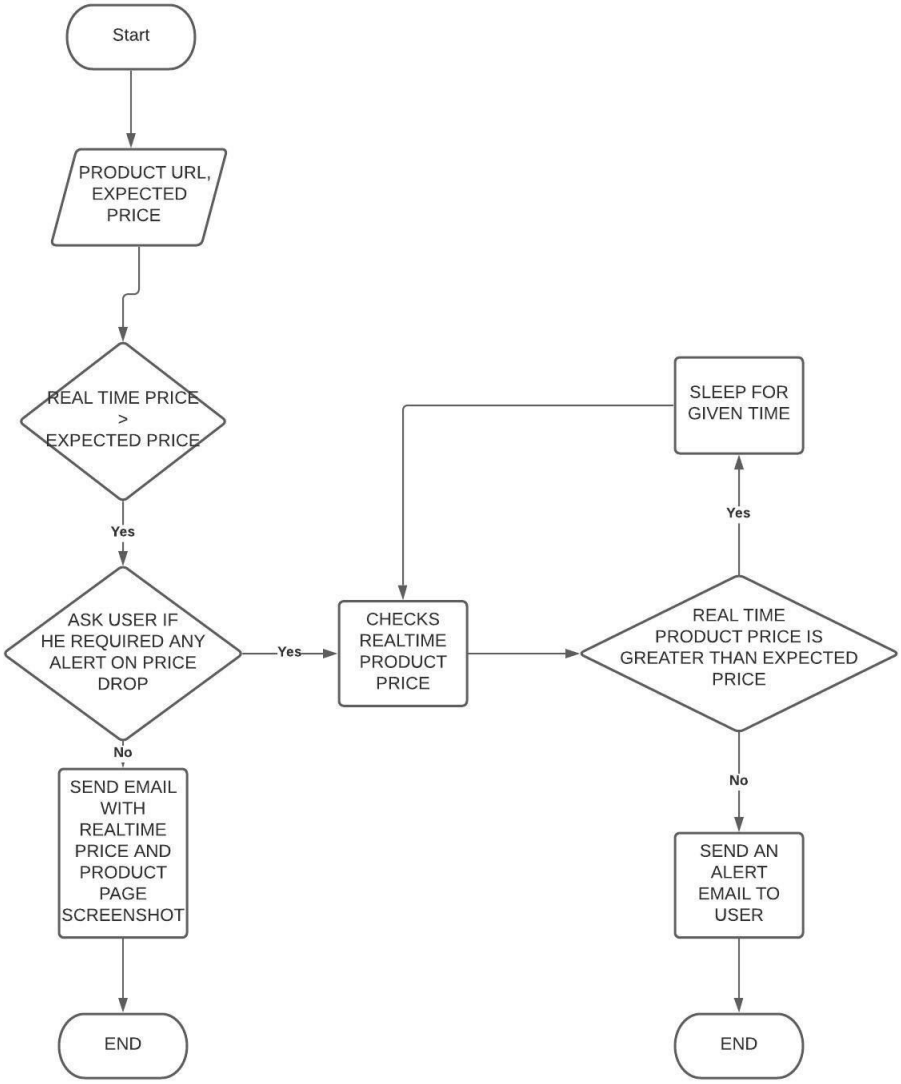
The discussed problem could be solved with many programming languages like Java, NodeJS and python. but we selected python due to the comfort level it provides.

To start with there are few requisites like machines that should contain a chrome browser preinstalled, the program works only through the command line and the user must install the required packages from the attached requirements.txt

Pseudocode

1. start
2. input product URL, email id, expected price from the user
3. validate URL belongs to amazon, Flipkart, MI, one plus. if not warn the user and exit the program.
4. validate email id, if invalid warns the user and exit the program
5. open product URL in headless chrome and extract price and stock status.
6. Ask the user for alert configuration if the real-time product price is greater than the user's expected price else print and send email product name, real-time price, stock status details.
7. If use selects for alert, the input time interval is minuted to extract price.
8. In the loop, verify whether the real-time product price is greater than the user's expected price if yes, print and send email product name, real-time price, stock status details else sleep for given internal and recheck.
9. end

Flowchart


Start
PRODUCT URL, EXPECTED PRICE
REAL TIME PRICE > EXPECTED PRICE
Yes
ASK USER IF HE REQUIRED ANY ALERT ON PRICE DROP
Yes
No
SEND EMAIL WITH REALTIME PRICE AND PRODUCT PAGE SCREENSHOT
END
CHECKS REALTIME PRODUCT PRICE
REAL TIME PRODUCT PRICE IS GREATER THAN EXPECTED PRICE
Yes
SLEEP FOR GIVEN TIME
No
SEND AN ALERT EMAIL TO USER
END

Packages Used

Below packages are used in our project where os and sys module for exiting the program, time is to make program sleep at given intervals, re(REGEX) to validate user inputs like email, selenium is used to automate or control web browser via python, sendemail and smtplib are used for sending alert emails to users

- *import os #for system-level tasks*
- *import time #to print time and assign sleep time variable*
- *import re #to validate the email id via register expression*
- *import sys #to exit program*
- *from selenium import webdriver #selenium is used for chrome automation*
- *from webdriver_manager.chrome import ChromeDriverManager*
- *from selenium.webdriver.support.wait import WebDriverWait*
- *from selenium.webdriver.support import expected_conditions as EC*
- *from selenium.webdriver.common.by import By*
- *from senemail import send_email #below packages are for sending email*
- *import smtplib*
- *from email.mime.text import MIMEText*
- *from email.mime.base import MIMEBase*
- *from email import encoders*

Results

Scenario 1: When the real-time product price is less than the user expected price.

```
PS C:\Users\Azureuser\Documents\GitHub\college-python-project> python .\index.py


DevTools listening on ws://127.0.0.1:52913/devtools/browser/40b886ac-7526-4f5c-8555-6515252e6aea
Please enter product URL from online stores amazon,flipkart,mi,oneplus : https://www.mi.com/in/buy/product/redmi-9?gid=4203500016
Please enter your email id for alerts: tatanithin007@gmail.com
Valid Email
Please enter expected price: 10000
URL belongs to MI website
Please wait, Sending email....
Alert email sent to tatanithin007@gmail.com from "pyproj1212@gmail.com", Thanks for using our script
Hola.. selected MI product, named Redmi 9 is available at price 9999,
```

fig: prints product available message and send alert email

Scenario 2: User set alert and script running in the loop when the real-time product price is less than the user's expected price.

```
PS C:\Users\Azureuser\Documents\GitHub\college-python-project> python .\index.py


DevTools listening on ws://127.0.0.1:53118/devtools/browser/09b3031f-fe8e-4c90-8ec8-0f3b4505bdb7
Please enter product URL from online stores amazon,flipkart,mi,oneplus : https://www.mi.com/in/buy/product/redmi-9?gid=4203500016
Please enter your email id for alerts: tatanithin007@gmail.com
Valid Email
Please enter expected price: 9000
URL belongs to MI website
Sorry your MI product, named Redmi 9 is priced at 9999, do you want to have an alert when price got doropped?
if YES type 1: 1
Setting alert
Please enter time interval in minutes to check price: 1
Setting up alert...., first check will be at Sun Dec 20 13:46:07 2020
URL belongs to MI website
Sorry your MI product, named Redmi 9 is priced at 9999, We will check product price again in 1 minutes at Sun Dec 20 13:47:15 2020
URL belongs to MI website
Sorry your MI product, named Redmi 9 is priced at 9999, We will check product price again in 1 minutes at Sun Dec 20 13:48:23 2020
```

fig: prints time for next run, product name and price

Scenario 3: Script warns and exit when provided URL does not belong to Amazon, Flipkart, MI or one plus and when email id is inavlid.

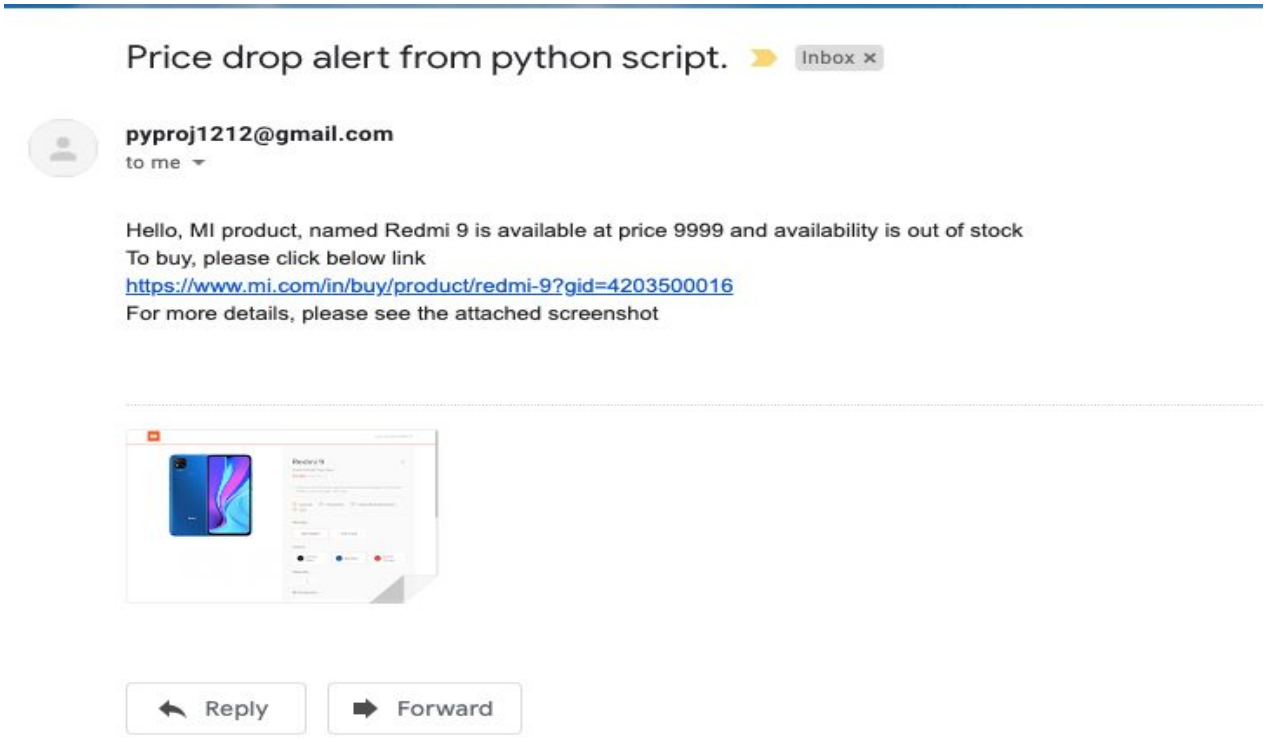
```
PS C:\Users\Azureuser\Documents\GitHub\college-python-project> python .\index.py


DevTools listening on ws://127.0.0.1:61364/devtools/browser/0c864d57-db08-40f0-a77e-f6d67b47c089
Please enter product URL from online stores amazon,flipkart,mi,oneplus : https://colab.research.google.com/drive/1__PqfHj0aTx0iMc_KbnTJDesihYq8YVs#scrollTo=
bsUpoFg3tFt8
Please enter your email id for alerts: tatanithin0071@gmail.com
Valid Email
Please enter expected price: 1000
Store not available. Please select from available store amazon,flipkart,mi,oneplus
PS C:\Users\Azureuser\Documents\GitHub\college-python-project> python .\index.py


DevTools listening on ws://127.0.0.1:61394/devtools/browser/9a993d7c-23fe-4f2c-a6f5-6a7ff45f68ce
Please enter product URL from online stores amazon,flipkart,mi,oneplus : https://www.mi.com/in/buy/product/redmi-9?gid=4203500016
Please enter your email id for alerts: nothin123
Invalid Email, please restart program and enter valid email address
PS C:\Users\Azureuser\Documents\GitHub\college-python-project>
```

fig: when incorrect url or email id is provided as input

Email alert: An alert email with an attachment of a screenshot



Conclusions

In real time this project would help us to buy products in the mentioned sites at a better price as we are setting a threshold value as the limit.

Future Work

Right now script could create an alert only for a single product, we could enhance it to work on multiple products by linking in the database and using multithreading concepts.

As we extract real-time product prices on an interval, we could store these values and extract a price pattern based on time and use these extracted values to calculate the best price, the best time to buy etc.

We could add affiliate parameters to the links sent via alert email to generate revenue using this script. The script author will get a commission when the user buys a product using the link provided in the email.

References

Github link for the code

https://github.com/tatanithin007/college-python-project

sending an email with attachment retrieved from

https://realpython.com/python-send-email/