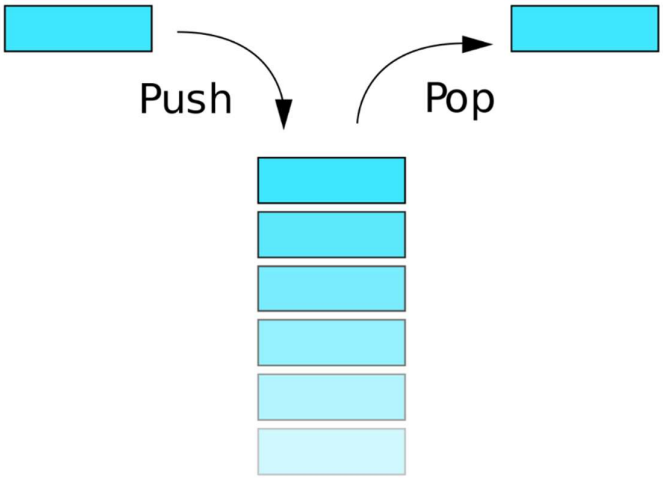

Data Structure Project

Browser History Manager with Doubly Linked List and Stack

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Overview

The primary objective of this project is to simulate a browser history manager that provides functionality to navigate between web pages using **Back**, **Forward**, and **Jump-to** actions.

Tools

- **Doubly Linked List :** used to represent the browser's history of visited pages , Each node in the list represents a webpage, with pointers to the previous and next pages for seamless backward and forward navigation.

- **Stack** : Used to Track Back and Forward , We have 2 stackes the first to back and another to forword

Implementation

In the first we have `Node` Class

To represents a webpage in the browser history (doubly linked) :

```
static class Node {

      String url;
      Node prev, next;

      public Node(String url) {
          this.url = url;
          this.prev = null;
          this.next = null;
      }
 }
```

`BrowserHistory` Class

To manages browser history using a doubly linked list

Constructor

```
public BrowserHistory(String homepage) {
          head = new Node(homepage);
          current = head;
      }
```

Methods

`BrowserHistory()` Method

To adds a new page to the browser history.

```
      public void visit(String url) {
          Node newNode = new Node(url);
          current.next = newNode;
          newNode.prev = current;
          current = newNode;
          System.out.println("Visited: " + url);
      }
```

`back(int steps)` Method

To move the current pointer back by steps

```
public String back(int steps) {
    while (steps > 0 && current.prev != null) {
        current = current.prev;
        steps--;
    }
    System.out.println("Back to: " + current.url);
    return current.url;
}
```

`forward(int steps)` Method

To move the current pointer forward by steps

```
public String forward(int steps) {
    while (steps > 0 && current.next != null) {
        current = current.next;
        steps--;
    }
    System.out.println("Forward to: " + current.url);
    return current.url;
}
```

`getCurrentPage()` Method

To Returns the URL of the current page.

```
public String getCurrentPage() {
    return current.url;
}
```

displayHistory() Method

To make loop in doubly linked list starting from head , and Displays all URLs that visited befor ,and marking the current page.

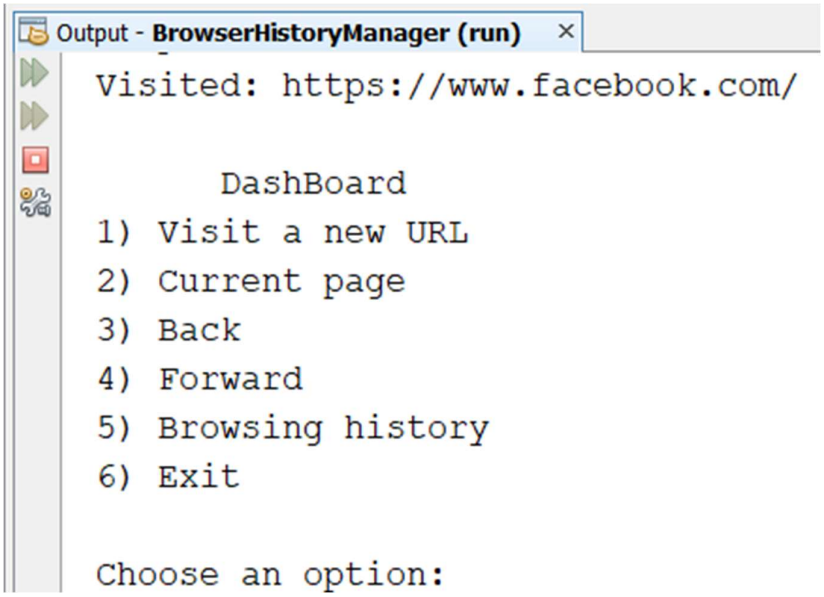
```
public void displayHistory() {
    Node temp = head;
    int index = 1;
    System.out.println("Browsing History:");
    while (temp != null) {
        if (temp == current) {
            System.out.println(index + ". " + temp.url + " (current)");
        } else {
            System.out.println(index + ". " + temp.url);
        }
        temp = temp.next;
        index++;
    }
}
```

Result

When we run the program

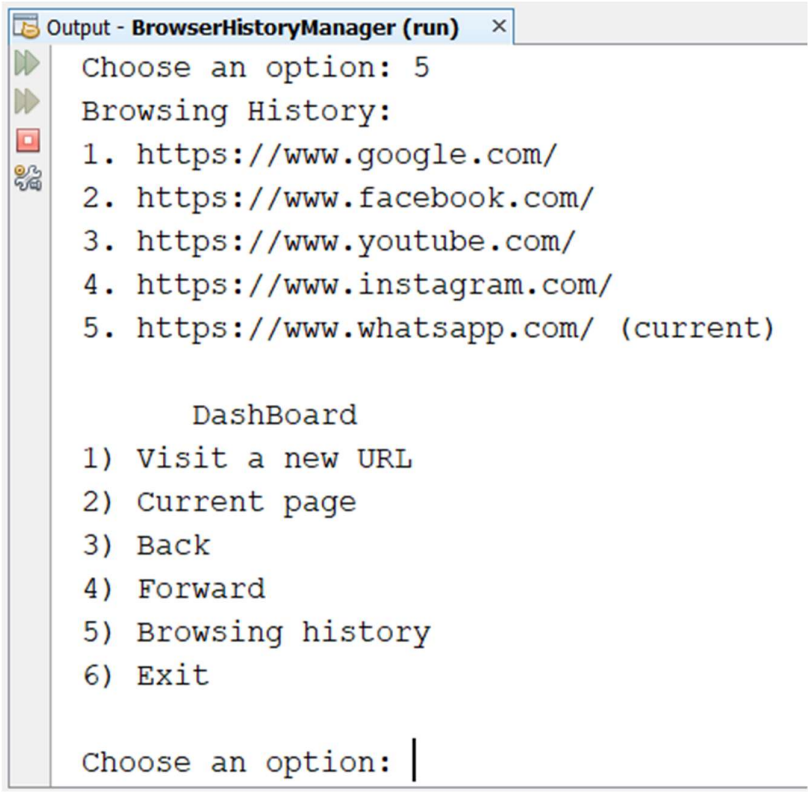
It request to Enter First URL , I entered https://www.google.com/

I will choose 1 to visit a new page https://www.facebook.com/

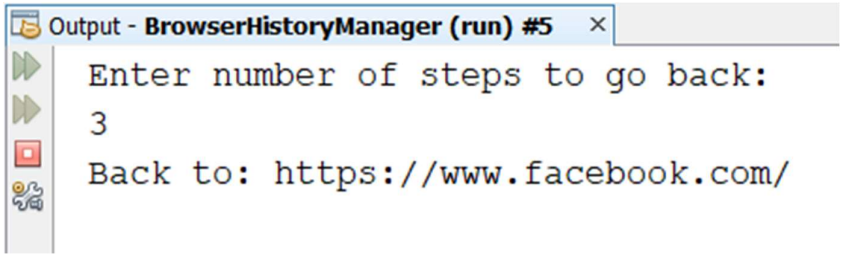


I will enter 1 to visit new pages to test on it as
(https://www.youtube.com/
https://www.instagram.com/
https://www.whatsapp.com/)

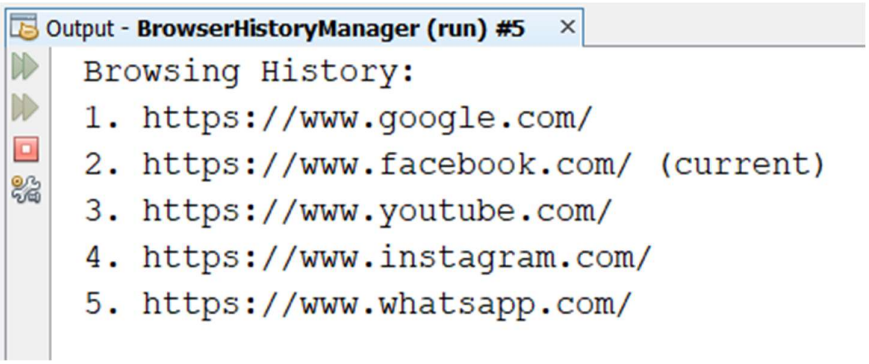
after visiting 5 pages we will choose 5 to show **Browsing history**



Now the current page is whatsapp we will chose 3 and enter number of steps (3) to **Back** to facebook

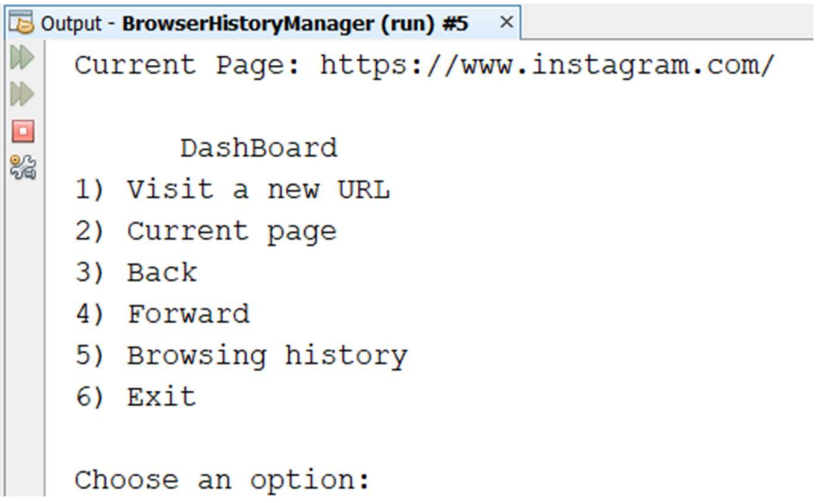


after Back 3 steps we will choose 5 to show **Browsing history**



We can also **Forward** by steps (ex: forward 2 steps to go to instagram)

To show **Current page** choose 2



At the end we can choose 6 to **Exit**

Source - Code

For Source Code Click :
https://github.com/AhmedHamed408/Browser-History-Manager.git

Or Scan