1. Browser history using Stack.

Code:

```
import java.util.Scanner;

import java.util.Stack;

public class BrowserHistory {

public static void main(String[] args) {
   Stack<String> backStack = new Stack<>();
   Stack<String> forwardStack = new Stack<>();
   String currentPage = "Home";

   Scanner sc = new Scanner(System.in);

   System.out.println("Browser History Started. Type: visit <url>, back, forward, current, exit");

   while (true) {
      System.out.print("Enter command: ");
      String input = sc.nextLine();
      String[] parts = input.split(" ");

      if (parts[0].equalsIgnoreCase("visit")) {
         if (parts.length < 2) {
            System.out.println("Please enter a valid URL.");
            continue;
         }
         backStack.push(currentPage);
         currentPage = parts[1];
         forwardStack.clear();
         System.out.println("Visited: " + currentPage);
      }
      else if (parts[0].equalsIgnoreCase("back")) {
         if (backStack.isEmpty()) {
            System.out.println("No pages to go back.");
         } else {
            forwardStack.push(currentPage);
```

```
            currentPage = backStack.pop();
            System.out.println("Back to: " + currentPage);
        }
    }
    else if (parts[0].equalsIgnoreCase("forward")) {
        if (forwardStack.isEmpty()) {
            System.out.println("No pages to go forward.");
        } else {
            backStack.push(currentPage);
            currentPage = forwardStack.pop();
            System.out.println("Forward to: " + currentPage);
        }
    }
    else if (parts[0].equalsIgnoreCase("current")) {
        System.out.println("Current Page: " + currentPage);
    }
    else if (parts[0].equalsIgnoreCase("exit")) {
        System.out.println("Exiting Browser History.");
        break;
    }
    else {
        System.out.println("Invalid command.");
    }
  }

  sc.close();
}


}
```

Output:

BrowserHistory.java

```java
            System.out.println("Please enter a valid URL.");

            continue;
        }
        backStack.push(currentPage);
        currentPage = parts[1];
        forwardStack.clear();
        System.out.println("Visited: " + currentPage);
    }
    else if (parts[0].equalsIgnoreCase("back")) {
        if (backStack.isEmpty()) {
            System.out.println("No pages to go back.");
        } else {
            forwardStack.push(currentPage);
            currentPage = backStack.pop();
            System.out.println("Back to: " + currentPage);
        }
```

Output

```
Browser History Started. Type: visit <url>, back, forward, current,
    exit
Enter command: visit https://www.programiz.com/java-programming/online
    -compiler/
Visited: https://www.programiz.com/java-programming/online-compiler/
Enter command: visit https://www.programiz.com/java-programming/online
    -compiler/2
Visited: https://www.programiz.com/java-programming/online-compiler/2
Enter command: back
Back to: https://www.programiz.com/java-programming/online-compiler/
Enter command: forward
Forward to: https://www.programiz.com/java-programming/online-compiler
    /2
Enter command: exit
Exiting Browser History.

=== Code Execution Successful ===
```

2. Printing Queue using LinkedList

```java
import java.util.LinkedList;
import java.util.Queue;
import java.util.Scanner;

public class PrintQueue {

    public static void main(String[] args) {
        Queue<String> printQueue = new LinkedList<>();
        Scanner sc = new Scanner(System.in);

        System.out.println("Print Queue Simulation");
        System.out.println("Commands: add <job>, process, view, exit");

        while (true) {
            System.out.print("Enter command: ");
            String input = sc.nextLine();
            String[] parts = input.split(" ", 2);

            if (parts[0].equalsIgnoreCase("add")) {
                if (parts.length < 2) {
                    System.out.println("Please enter a job name.");
                    continue;
                }
                printQueue.add(parts[1]);
```

```
            System.out.println("Job added: " + parts[1]);
        }
        else if (parts[0].equalsIgnoreCase("process")) {
            if (printQueue.isEmpty()) {
                System.out.println("No print jobs to process.");
            } else {
                String job = printQueue.poll();
                System.out.println("Processing job: " + job);
            }
        }
        else if (parts[0].equalsIgnoreCase("view")) {
            if (printQueue.isEmpty()) {
                System.out.println("No pending print jobs.");
            } else {
                System.out.println("Pending print jobs:");
                for (String job : printQueue) {
                    System.out.println("- " + job);
                }
            }
        }
        else if (parts[0].equalsIgnoreCase("exit")) {
            System.out.println("Exiting Print Queue.");
            break;
        }
        else {
            System.out.println("Invalid command.");
        }
    }

    sc.close();
  }
}
```

PrintQueue.java

```java
import java.util.LinkedList;

import java.util.Queue;

import java.util.Scanner;



public class PrintQueue {



    public static void main(String[] args) {

        Queue<String> printQueue = new LinkedList<>();

        Scanner sc = new Scanner(System.in);
```

Output

```
Print Queue Simulation
Commands: add <job>, process, view, exit
Enter command: add 1
Job added: 1
Enter command: process
Processing job: 1
Enter command: view
No pending print jobs.
Enter command: exit
Exiting Print Queue.

=== Code Execution Successful ===
```

3. Hospital Bed Management System using LinkedList

```java
import java.util.LinkedList; import java.util.Scanner;

public class HospitalBedManagement {

public static void main(String[] args) {
   LinkedList<String> beds = new LinkedList<>();
   Scanner sc = new Scanner(System.in);

   System.out.println("Hospital Bed Management System");
   System.out.println("Commands: assign <patient_name>, discharge <patient_name>, display,
exit");

   while (true) {
      System.out.print("Enter command: ");
      String input = sc.nextLine();
      String[] parts = input.split(" ", 2);

      if (parts[0].equalsIgnoreCase("assign")) {
         if (parts.length < 2) {
            System.out.println("Please enter patient name.");
            continue;
         }
         beds.add(parts[1]);
         System.out.println("Bed assigned to: " + parts[1]);
      }
```

```
        else if (parts[0].equalsIgnoreCase("discharge")) {
            if (parts.length < 2) {
                System.out.println("Please enter patient name to discharge.");
                continue;
            }
            String patient = parts[1];
            if (beds.remove(patient)) {
                System.out.println("Patient discharged: " + patient);
            } else {
                System.out.println("Patient not found.");
            }
        }
        else if (parts[0].equalsIgnoreCase("display")) {
            if (beds.isEmpty()) {
                System.out.println("No patients currently admitted.");
            } else {
                System.out.println("Current Occupancy:");
                for (int i = 0; i < beds.size(); i++) {
                    System.out.println("Bed " + (i + 1) + ": " + beds.get(i));
                }
            }
        }
        else if (parts[0].equalsIgnoreCase("exit")) {
            System.out.println("Exiting Hospital Bed Management.");
            break;
        }
        else {
            System.out.println("Invalid command.");
        }
    }

    sc.close();
}


}
```

HospitalBedManagement.java

```
                    beds.get(i));
                }
            }
        }
        else if (parts[0].equalsIgnoreCase("exit")) {
            System.out.println("Exiting Hospital Bed Management
                .");
            break;
        }
        else {
            System.out.println("Invalid command.");
        }
    }

    sc.close();
}
```

Output

```
Hospital Bed Management System
Commands: assign <patient_name>, discharge <patient_name>, display,
    exit
Enter command: assign pratham
Bed assigned to: pratham
Enter command: assign rohan
Bed assigned to: rohan
Enter command: discharge pratham
Patient discharged: pratham
Enter command: exit
Exiting Hospital Bed Management.

=== Code Execution Successful ===
```

4. Undo-Redo Function using Stack

```
import java.util.Scanner;

import java.util.Stack;


public class UndoRedo {


    public static void main(String[] args) {

        Stack<String> undoStack = new Stack<>();

        Stack<String> redoStack = new Stack<>();

        Scanner sc = new Scanner(System.in);


        System.out.println("Undo-Redo System (Commands: action <task>, undo, redo, show,
exit)");


        while (true) {

            System.out.print("Enter command: ");

            String input = sc.nextLine();
```

```
String[] parts = input.split(" ", 2);


if (parts[0].equalsIgnoreCase("action")) {
    if (parts.length < 2) {
        System.out.println("Please enter a task.");
        continue;
    }
    undoStack.push(parts[1]);
    redoStack.clear();
    System.out.println("Action done: " + parts[1]);
} else if (parts[0].equalsIgnoreCase("undo")) {
    if (undoStack.isEmpty()) {
        System.out.println("Nothing to undo.");
    } else {
        String lastAction = undoStack.pop();
        redoStack.push(lastAction);
        System.out.println("Undo: " + lastAction);
    }
} else if (parts[0].equalsIgnoreCase("redo")) {
    if (redoStack.isEmpty()) {
        System.out.println("Nothing to redo.");
    } else {
```

```
            String redoAction = redoStack.pop();
            undoStack.push(redoAction);
            System.out.println("Redo: " + redoAction);
        }
    } else if (parts[0].equalsIgnoreCase("show")) {
        System.out.println("Current Actions: " + undoStack);
    } else if (parts[0].equalsIgnoreCase("exit")) {
        break;
    } else {
        System.out.println("Invalid command.");
    }
  }
  sc.close();
 }
}
```

```
            System.out.println("Nothing to undo.");

        } else {

            String lastAction = undoStack.pop();

            redoStack.push(lastAction);

            System.out.println("Undo: " + lastAction);

        }

    } else if (parts[0].equalsIgnoreCase("redo")) {

        if (redoStack.isEmpty()) {

            System.out.println("Nothing to redo.");

```

```
Undo-Redo System (Commands: action <task>, undo, redo, show, exit)
Enter command: action up
Action done: up
Enter command: action down
Action done: down
Enter command: action right
Action done: right
Enter command: undo
Undo: right
Enter command: undo
Undo: down
Enter command: redo
Redo: down
Enter command: show
Current Actions: [up, down]
Enter command:
```

5. Ticket Booking System using queue

```
import java.util.LinkedList;

import java.util.Queue;

import java.util.Scanner;


public class TicketBooking {


    public static void main(String[] args) {

        Queue<String> bookingQueue = new LinkedList<>();

        Scanner sc = new Scanner(System.in);


        System.out.println("Ticket Booking System (Commands: add <name>, serve, cancel
<name>, view, exit)");


        while (true) {

            System.out.print("Enter command: ");

            String input = sc.nextLine();

            String[] parts = input.split(" ", 2);


            if (parts[0].equalsIgnoreCase("add")) {

                if (parts.length < 2) {

                    System.out.println("Please enter a name.");

                    continue;

                }
```

```
    bookingQueue.add(parts[1]);
    System.out.println(parts[1] + " added to booking queue.");


} else if (parts[0].equalsIgnoreCase("serve")) {
    if (bookingQueue.isEmpty()) {
        System.out.println("No one in queue.");
    } else {
        System.out.println("Serving: " + bookingQueue.poll());
    }
} else if (parts[0].equalsIgnoreCase("cancel")) {
    if (parts.length < 2) {
        System.out.println("Please enter name to cancel.");
        continue;
    }
    if (bookingQueue.remove(parts[1])) {
        System.out.println("Cancelled ticket for: " + parts[1]);
    } else {
        System.out.println("Person not found in queue.");
    }
} else if (parts[0].equalsIgnoreCase("view")) {
    System.out.println("Current Queue: " + bookingQueue);
} else if (parts[0].equalsIgnoreCase("exit")) {
```

```
            System.out.println("Exiting booking system.");
            break;
        } else {
            System.out.println("Invalid command.");
        }
    }
    sc.close();
  }
}
```

TicketBooking.java

```
87          } else if (parts[0].equalsIgnoreCase("exit")) {
88
89              System.out.println("Exiting booking system.");
90
91              break;
92
93          } else {
94
95              System.out.println("Invalid command.");
96
97          }
98
99      }
100
101     sc.close();
102
103 }
```

Output

```
Ticket Booking System (Commands: add <name>, serve, cancel <name>, view
    , exit)
Enter command: add pratham
pratham added to booking queue.
Enter command: add k
k added to booking queue.
Enter command: add b
b added to booking queue.
Enter command: serve k
Serving: pratham
Enter command: view
Current Queue: [k, b]
Enter command:
```

6. Car Wash Service using Queue

```
import java.util.LinkedList;

import java.util.Scanner;

public class CarWashQueue {

public static void main(String[] args) {
   LinkedList<String> carQueue = new LinkedList<>();
   Scanner sc = new Scanner(System.in);
```

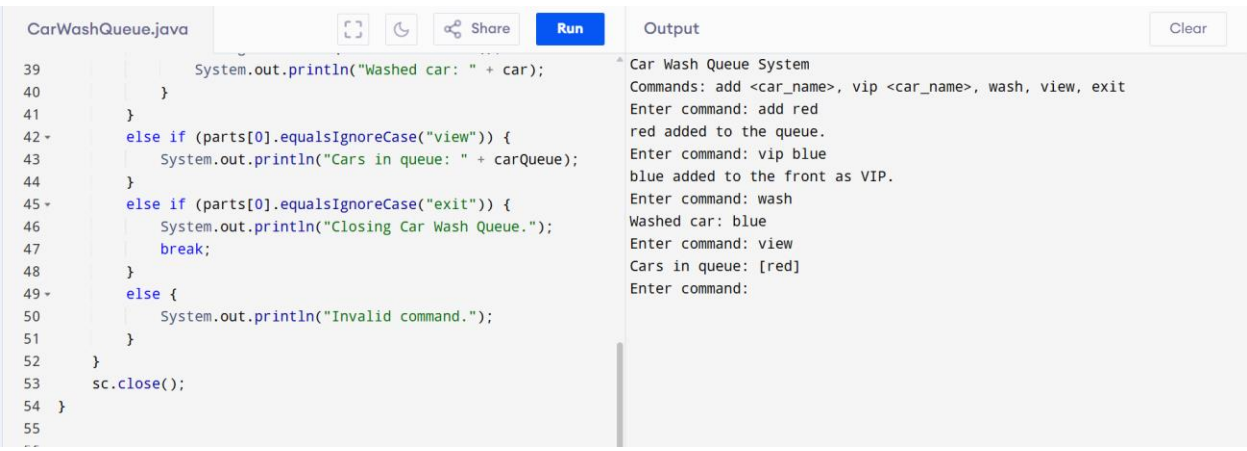
```
System.out.println("Car Wash Queue System");
 System.out.println("Commands: add <car_name>, vip <car_name>, wash, view, exit");

 while (true) {
    System.out.print("Enter command: ");
    String input = sc.nextLine();
    String[] parts = input.split(" ", 2);

    if (parts[0].equalsIgnoreCase("add")) {
       if (parts.length < 2) {
          System.out.println("Please enter car name.");
          continue;
       }
       carQueue.addLast(parts[1]);
       System.out.println(parts[1] + " added to the queue.");
    }
    else if (parts[0].equalsIgnoreCase("vip")) {
       if (parts.length < 2) {
          System.out.println("Please enter car name.");
          continue;
       }
       carQueue.addFirst(parts[1]);
       System.out.println(parts[1] + " added to the front as VIP.");
    }
    else if (parts[0].equalsIgnoreCase("wash")) {
       if (carQueue.isEmpty()) {
          System.out.println("No cars to wash.");
       } else {
          String car = carQueue.removeFirst();
          System.out.println("Washed car: " + car);
       }
    }
    else if (parts[0].equalsIgnoreCase("view")) {
       System.out.println("Cars in queue: " + carQueue);
    }
    else if (parts[0].equalsIgnoreCase("exit")) {
       System.out.println("Closing Car Wash Queue.");
       break;
```

```
        }
        else {
            System.out.println("Invalid command.");
        }
    }
    sc.close();
}


}
```



7. Library Book Stack

```
import java.util.Scanner;
import java.util.Stack;

public class LibraryBookStack {

    public static void main(String[] args) {
        Stack<String> bookStack = new Stack<>();
        Scanner sc = new Scanner(System.in);

        System.out.println("Library Book Stack");
        System.out.println("Commands: add <book_name>, remove, peek, exit");

        while (true) {
            System.out.print("Enter command: ");
            String input = sc.nextLine();
            String[] parts = input.split(" ", 2);
```

```
            if (parts[0].equalsIgnoreCase("add")) {
                if (parts.length < 2) {
                    System.out.println("Please enter book name.");
                    continue;
                }
                bookStack.push(parts[1]);
                System.out.println(parts[1] + " added to stack.");
            }
            else if (parts[0].equalsIgnoreCase("remove")) {
                if (bookStack.isEmpty()) {
                    System.out.println("No books to remove.");
                } else {
                    String book = bookStack.pop();
                    System.out.println("Removed book: " + book);
                }
            }
            else if (parts[0].equalsIgnoreCase("peek")) {
                if (bookStack.isEmpty()) {
                    System.out.println("No books in stack.");
                } else {
                    System.out.println("Top book: " + bookStack.peek());
                }
            }
            else if (parts[0].equalsIgnoreCase("exit")) {
                System.out.println("Exiting Library System.");
                break;
            }
            else {
                System.out.println("Invalid command.");
            }
        }
        sc.close();
    }
}
```

LibraryBookStack.java

```
            System.out.println("Exiting Library System.");

            break;

        }

        else {

            System.out.println("Invalid command.");

        }

    }

    sc.close();

}
```

Output

```
Library Book Stack
Commands: add <book_name>, remove, peek, exit
Enter command: add harry potter
harry potter added to stack.
Enter command: add me, myself and I
me, myself and I added to stack.
Enter command: peek
Top book: me, myself and I
Enter command: remove
Removed book: me, myself and I
Enter command: exit
Exiting Library System.

=== Code Execution Successful ===
```

8. Expression Evaluator

```
import java.util.*;

public class ExpressionEvaluator {

// Method to get precedence
public static int precedence(char ch) {
   switch (ch) {
      case '+':
      case '-': return 1;
      case '*':
      case '/': return 2;
   }
   return -1;
}

// Convert infix to postfix
public static String infixToPostfix(String infix) {
   StringBuilder postfix = new StringBuilder();
   Stack<Character> stack = new Stack<>();

   for (char ch : infix.replaceAll("\\s+", "").toCharArray()) {
      if (Character.isDigit(ch))

postfix.append(ch);
      }
      else if (ch == '(') {
         stack.push(ch);
```

```
        }
        else if (ch == ')') {
            while (!stack.isEmpty() && stack.peek() != '(') {
                postfix.append(stack.pop());
            }
            stack.pop(); // remove '('
        }
        else { // operator
            while (!stack.isEmpty() && precedence(stack.peek()) >= precedence(ch)) {
                postfix.append(stack.pop());
            }
            stack.push(ch);
        }
    }

    while (!stack.isEmpty()) {
        postfix.append(stack.pop());
    }

    return postfix.toString();
}

// Evaluate postfix expression
public static int evaluatePostfix(String postfix) {
    Stack<Integer> stack = new Stack<>();

    for (char ch : postfix.toCharArray()) {
        if (Character.isDigit(ch)) {
            stack.push(ch - '0'); // convert char to int
        } else {
            int b = stack.pop();
            int a = stack.pop();
            switch (ch) {
                case '+': stack.push(a + b); break;
                case '-': stack.push(a - b); break;
                case '*': stack.push(a * b); break;
                case '/': stack.push(a / b); break;
            }
```

```
        }
    }

    return stack.pop();
}

public static void main(String[] args) {
    Scanner sc = new Scanner(System.in);
    System.out.println("Enter infix expression (only single digit numbers): ");
    String infix = sc.nextLine();

    String postfix = infixToPostfix(infix);
    System.out.println("Postfix Expression: " + postfix);

    int result = evaluatePostfix(postfix);
    System.out.println("Result after evaluation: " + result);
}


}
```