

Task 3:

Naive Pattern Search Implement the naive pattern searching algorithm to find all occurrences of a pattern within a given text string. Count the number of comparisons made during the search to evaluate the efficiency of the algorithm.

Ans:

```
package Day16;
```

```
import java.util.ArrayList;
```

```
import java.util.List;
```

```
public class NaivePatternSearch {
```

```
    public static class SearchResult {
```

```
        List<Integer> occurrences;
```

```
        int comparisons;
```

```
        public SearchResult(List<Integer> occurrences, int comparisons) {
```

```
            this.occurrences = occurrences;
```

```
            this.comparisons = comparisons;
```

```
        }
```

```
        @Override
```

```
        public String toString() {
```

```
            return "Occurrences: " + occurrences + "\nComparisons: " + comparisons;
```

```
        }
```

```
    }
```

```
    public static SearchResult naivePatternSearch(String text, String pattern) {
```

```
        int textLength = text.length();
```

```
        int patternLength = pattern.length();
```

```
        int comparisons = 0;
```

```
        List<Integer> occurrences = new ArrayList<>();
```

```
        for (int i = 0; i <= textLength - patternLength; i++) {
```

```
            boolean match = true;
```

```
            for (int j = 0; j < patternLength; j++) {
```

```
                comparisons++;
```

```
                if (text.charAt(i + j) != pattern.charAt(j)) {
```

```
                    match = false;
```

```
                    break;
```

```
                }
```

```
            }
```

```
            if (match) {
```

```
                occurrences.add(i);
```

```
            }
```

```
        }
```

```
        return new SearchResult(occurrences, comparisons);
```

```
}  
  
public static void main(String[] args) {  
    String text = "ABABDABACDABABCABAB";  
    String pattern = "ABABCABAB";  
    SearchResult result = naivePatternSearch(text, pattern);  
    System.out.println(result);  
}  
}
```

OUTPUT:

Occurrences: [10]

Comparisons: 29