

Lab Report 3 - Bugs and Commands (Week 5)

Part 1

Failure-inducing input:

```
@Test
public void testReverseInPlace() {
    int[] input1 = {1,2,3,4,5};
    ArrayExamples.reverseInPlace(input1);
    assertEquals(new int[]{5,4,3,2,1}, input1);
}
```

Output:

```
There was 1 failure:
1) testReverseInPlace(ArrayTests)
arrays first differed at element [3]; expected:<2> but was:<4>
```

Okay input:

```
@Test
public void testReverseInPlace() {
    int[] input1 = {1};
    ArrayExamples.reverseInPlace(input1);
    assertEquals(new int[]{1}, input1);
}
```

Output:

```
JUnit version 4.13.2
...
Time: 0.015

OK (3 tests)
```

Before-code:

```
static void reverseInPlace(int[] arr) {
    for(int i = 0; i < arr.length; i += 1) {
        arr[i] = arr[arr.length - i - 1];
    }
}
```

```
}  
}
```

After-code:

```
static void reverseInPlace(int[] arr) {  
    for(int i = 0; i < arr.length / 2; i += 1) {  
        int temp = arr[i];  
        arr[i] = arr[arr.length - i - 1];  
        arr[arr.length - i - 1] = temp;  
    }  
}
```

The before-code overwrites the first half of the array with the second half of the array, so the array is reversed, but the second half of the reversed array is lost. The after-code swaps the first and last elements, then the second and second-to-last elements, and so on, so the array is reversed without losing any elements.

Part 2

grep

4 interesting command-line options:

-i - ignore case

```
grep -i "study" technical/biomed/1468-6708-3-1.txt
```

```
events [ 10 ] . In this paper we study whether BMI at  
    Study design: The Cardiovascular Health  
    Study  
    The Cardiovascular Health Study (CHS) is a  
    population-based longitudinal study of 5,888 adults aged  
    from EVGFP) in the first seven years of the study, adjusted  
    CHS Cardiovascular Health Study
```

This also matches "Study", which is not matched by the default case-sensitive search.

```
grep -i "Clinical" technical/biomed/1468-6708-3-1.txt
```

```
decreased mortality. Clinical trials powered to detect  
whom risk factors, subclinical disease, and morbidity are  
    baseline. Clinical covariates include hypertension,  
significantly greater than zero. A clinical trial of a  
    Implications for clinical trials  
    YHL, but not YOL. Clinical trials of weight modification  
    found for underweight older adults. Clinical trials whose
```

outcome measure. Both YOL and YHL would be clinically
YHL as the outcome measure in clinical trials involving

This also matches "clinical", which is not matched by the default case-sensitive search.

-n - print line numbers

```
grep -n "months" technical/biomed/1468-6708-3-1.txt
```

```
57:      brief telephone interview 6 months after each scheduled
85:      months. EVGFP is a simple but well-known measure, which
100:     months, YHL has a reasonably continuous distribution. A
```

This shows the line numbers of the lines that match the search term.

```
grep -n "risk factors" technical/biomed/1468-6708-3-1.txt
```

```
27:      In older adults, risk factors may have a greater effect
37:      whom risk factors, subclinical disease, and morbidity are
383:     effects of obesity on risk factors for future health. A
```

This shows the line numbers of the lines that match the search term.

-v - invert match

```
grep -v "study" technical/biomed/1468-6708-3-1.txt | wc -l
```

```
429
```

This shows the number of lines that do not match the search term.

```
grep -v "health" technical/biomed/1468-6708-3-1.txt | wc -l
```

```
388
```

This shows the number of lines that do not match the search term.

-c - print count

```
grep -c "study" technical/biomed/1468-6708-3-1.txt
```

```
3
```

This shows the number of lines that match the search term.

```
grep -c "health" technical/biomed/1468-6708-3-1.txt
```

44

This shows the number of lines that match the search term.

Information source: Github Copilot