**COMP2026 Problem Solving Using Object Oriented Programming**

# Laboratory 3

# Part A Discovery Exercises

***\*Type your answers in XXXXXXXX\_lab03.docx***

**Task 1: File Input**

1. Create a project called **Lab03** in IntelliJ. Put the given **FileInputExample.java** program in to the **src** folder. Run the program and paste the output below.

|  |
| --- |
| The file input.txt is not found. |

1. The given **FileInputExample.java** program reads input from a file called input.txt. Put the given **input.txt** file into the project file **Lab03**. Run the program again and paste the output below.

|  |
| --- |
| This is line 1.  This is line 2.  This is line 3.  This is line 4.  This is line 5. |

**Task 2: File Output**

1. Put the given **FileOutputExample.java** program in to the **src** folder of the **Lab03** project. This program writes output into a file called **output.txt**.
2. Run the program. Where is the output.txt file?

In the Location of C:\Users\22462\IdeaProjects\Lab03

|  |
| --- |
|  |

1. Paste the content of output.txt below.

|  |
| --- |
| This is line 1.  This is line 2. |

1. Run the program again. Paste the content of output.txt below.

|  |  |
| --- | --- |
| |  | | --- | | This is line 1.  This is line 2. |     Does the content of output.txt change?  No, it don’t have any change in text file. |

**Task 3: File Append**

1. Put the given **FileAppendExample.java** program in to the **src** folder of the **Lab03** project. This program writes output into a file called **appendOutput.txt**.
2. Run the program once. Paste the content of appendOutput.txt below.

|  |
| --- |
| This is a line. |

1. Run the program again. Paste the content of appendOutput.txt below.

|  |
| --- |
| This is a line.  This is a line. |

|  |
| --- |
| Does the content of appendOutput.txt change? Why?  Yes, because it just open the original file of appendOutput.txt and continue adding new content. |

**Task 4: Loop Conversion**

Rewrite the given loop into other types of loop. In some parts, you may need to add more statements rather than just writing a loop.

1. Given:

|  |
| --- |
| for (int i = 0; i < n; i++){ //n is an integer  System.out.println(i);  } |

1. Rewrite the above using a **while** loop.

|  |
| --- |
| int i = 0; while (i < n) {  System.*out*.println(i);  i++; } |

1. Rewrite the above using a **do...while** loop.

|  |
| --- |
| int i=0; do{  System.*out*.println(i);  i++; }while(i<n); |

1. Suppose the following print statement is added **after** the above three loops to print the value of **i**, what will be printed? Is there any side-effect when converting a for loop to another type?

|  |
| --- |
| System.out.println(i); |

|  |
| --- |
| It will print the number from 0 to the integer of n. |
| No. |
|  |
|  |
|  |

1. Given:

|  |
| --- |
| while(in.hasNextLine()){ //in is a scanner object  System.out.println(in.nextLine());  } |

1. Rewrite the above using a **for** loop.

|  |
| --- |
| for(;in.hasNextLine();){  System.out.println(in.nextLine(); } |

1. Rewrite the above using a **do..while** loop.

|  |
| --- |
| do{  System.out.println(in.nextLine(); }  While (in.hasNextLine()); |

1. Given:

|  |
| --- |
| do{  System.out.print("Enter an integer: ");  n = in.nextInt(); //in is a scanner object  }while(n < 1 || n > 10); //n is an integer |

1. Rewrite the above using a **for** loop.

|  |
| --- |
| for ( ;n < 1 || n > 10 ;){  System.out.print("Enter an integer: ");  n = in.nextInt();  } |

1. Rewrite the above using a **while** loop.

|  |
| --- |
| while(n < 1 || n > 10){  System.out.print("Enter an integer: ");  n = in.nextInt();  } |

**References**

1. Bravaco, R., & Simonson, C. (2009). *Java programming: From the ground up*. Dubuque, IA: McGraw-Hill.
2. Dean, J., & Dean, R. (2008). *Introduction to programming with Java: A problem solving approach*. Boston: McGraw-Hill.
3. Farrell, J. (2012). *Java programming. Boston, MA: Course Technology Cengage Learning*
4. Forouzan, B. A., & Gilberg, R. F. (2007). *Computer science: A structured programming approach using C (3rd ed.)*. Boston, MA: Thomson Course Technology.
5. Gaddis, T. (2016). *Starting out with Java (6th ed.)*. Pearson.
6. Liang, Y. D. (2013). *Introduction to Java programming: Comprehensive version*. (8th ed.). Pearson.
7. Schildt, H. ( 2006). *Java a beginner's guide*. New York: McGraw Hill.
8. Schildt, H., & Skrien, D. J. (2013). Java programming: A comprehensive introduction. New York: McGraw-Hill.
9. Wu, C. T. (2010). *An introduction to object-oriented programming with Java*. Boston: McGraw Hill Higher Education
10. Xavier, C. (2011). *Java programming: A practical approach*. New Delhi: Tata McGraw Hill.
11. yet another insignificant Programming Notes. (n.d.). Retrieved from https://www3.ntu.edu.sg/home/ehchua/programming
12. Zakhour, S., Kannan, S., & Gallardo, R. (2013). *The Java tutorial: A short course on the basics (5th ed.)*.