System Requirements Specification Index

For

While Loop

Version 1.0

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System Requirements Specification

1 Project Abstract

This project assesses knowledge of Java looping constructs, specifically the **while loop**.
The tasks involve using the while loop to perform iterative operations such as counting, summation, factorial calculation, countdowns, and generating sequences.

2 Assessment Tasks

Task 1: Print Numbers from 1 to N Using While Loop:

- Declare an integer variable `N` with an initial value of `5`.
- Print a message: `"Numbers from 1 to <N>:"`.
- Declare and initialize an integer variable `i` with `1`.
- Use a `while` loop to iterate while `i` is less than or equal to `N`:
  - ➔ Print the value of `i` followed by a space.
  - ➔ Increment `i` by `1` in each iteration.
- Print a new line after the loop completes.

Task 2: Calculate Sum of First N Natural Numbers Using While Loop:

- Declare an integer variable `sum` with an initial value of `0`.
- Reinitialize `i` to `1`.
- Use a `while` loop to iterate while `i` is less than or equal to `N`:
  - ➔ Add the value of `i` to `sum`.
  - ➔ Increment `i` by `1` in each iteration.
- After the loop, print the result: `"Sum of first <N> natural numbers: <sum>"`.

Task 3: Calculate Factorial of a Number N Using While Loop:

- Declare an integer variable `number` with an initial value of `5`.
- Declare another integer variable `factorial` with value `1`.
- Reinitialize `i` to `1`.
- Use a `while` loop to iterate while `i` is less than or equal to `number`:
  - ➔ Multiply `factorial` by `i` in each iteration.
  - ➔ Increment `i` by `1` in each iteration.
- After the loop, print the result: `"Factorial of <number>: <factorial>"`.

Task 4: Count Down from N to 1 Using While Loop:

- Print a message: `"Count down from <N>:"`.
- Reinitialize `i` to `N`.
- Use a `while` loop to iterate while `i` is greater than or equal to `1`:
  - ➔ Print the value of `i` followed by a space.
  - ➔ Decrement `i` by `1` in each iteration.
- Print a new line after the loop completes.

Task 5: Print Fibonacci Sequence Up to N Terms Using While Loop:

- Declare and initialize two integer variables:
  - ➔ `first` with `0`.
  - ➔ `second` with `1`.
- Print a message: `"Fibonacci sequence up to <N> terms:"`.
- Reinitialize `i` to `1`.
- Use a `while` loop to iterate while `i` is less than or equal to `N`:
  - ➔ Print the value of `first` followed by a space.
  - ➔ Add `first` and `second` and store the result in an integer variable named `next`.
  - ➔ Assign `second` to `first` and assign `next` to `second`.
  - ➔ Increment `i` by `1` in each iteration.
- Print a new line after the loop completes.

Expected Output:

```
Numbers from 1 to 5: 1 2 3 4 5
Sum of first 5 natural numbers: 15
Factorial of 5: 120
Count down from 5: 5 4 3 2 1
Fibonacci sequence up to 5 terms: 0 1 1 2 3
```

3 Template Code Structure

3.1 Package: com.yaksha.assignment.WhileLoopAssignment

Resources

Class/Interface	Description	Status
WhileLoopAssignment(class)	• Main class demonstrating iterative operations using **while loops**. • Includes examples of:	Need to be implemented.

	- Printing numbers from 1 to N using **while loop**. - Calculating sum of first N natural numbers. - Calculating factorial of a number. - Counting down from N to 1. - Printing Fibonacci sequence up to N terms.	

4 Execution Steps to Follow

1. **All actions like build, compile, running application, running test cases will be through Command Terminal.**
2. **To open the command terminal the test takers, need to go to Application menu (Three horizontal lines at left top) □ Terminal □New Terminal.**
3. **This editor Auto Saves the code.**
4. **If you want to exit(logout) and continue the coding later anytime (using Save & Exit option on Assessment Landing Page) then you need to use CTRL+Shift+B-command compulsorily on code IDE. This will push or save the updated contents in the internal git/repository. Else the code will not be available in the next login.**
5. **These are time bound assessments the timer would stop if you logout and while logging in back using the same credentials the timer would resume from the same time it was stopped from the previous logout.**
6. **To run your project use command:**
   mvn compile exec:java
   -Dexec.mainClass="com.yaksha.assignment.WhileLoopAssignment"
7. **To test your project test cases, use the command**
   mvn test
8. **You need to use CTRL+Shift+B - command compulsorily on code IDE, before final submission as well. This will push or save the updated contents in the internal git/repository, and will be used to evaluate the code quality.**