

# Comprehensive Exam on Windows Batch (.bat) Files

## 1 Multiple Choice Questions (20 points)

1. What is the primary purpose of a batch file in Windows?
  - (a) To compile C++ programs
  - (b) To automate command sequences
  - (c) To edit system registry
  - (d) To create graphical interfaces
2. Which command is used to display text in a batch file?
  - (a) `print`
  - (b) `echo`
  - (c) `display`
  - (d) `show`
3. What does the `%1` symbol represent in a batch file?
  - (a) The first line of the file
  - (b) The first command-line argument
  - (c) The exit code of the previous command
  - (d) The current directory
4. Which command pauses execution and displays "Press any key to continue..."?

- (a) `wait`
- (b) `pause`
- (c) `stop`
- (d) `halt`

5. What is the correct syntax for an IF statement in batch files?

- (a) `if [condition] then [command]`
- (b) `if (condition) { command }`
- (c) `if condition command`
- (d) `IF condition (command) ELSE (command)`

## 2 True or False (10 points)

Mark the following statements as True (T) or False (F):

- 1. `echo off` prevents commands from being displayed as they execute.
- 2. The `goto` command can only jump forward in the script, not backward.
- 3. Environment variables are accessed using `%%` symbols (e.g., `%PATH%`).
- 4. The `for` loop in batch files can only iterate through files in a directory.
- 5. `set /p` allows for user input during batch file execution.

## 3 Short Answer Questions (20 points)

- 1. Explain the difference between `call` and `start` commands in batch files.
- 2. Describe how error levels (`%errorlevel%`) work in batch files and provide an example of their usage.
- 3. What is the purpose of delayed expansion (`setlocal enabledelayedexpansion`) and when would you use it?
- 4. Explain how to create and use functions in batch files.
- 5. Describe three different ways to comment code in a batch file.

## 4 Code Writing (30 points)

1. Write a batch file that:
  - Takes a directory path as a parameter
  - Lists all files with a specific extension (e.g., .txt) in that directory
  - For each file, displays its name and size in KB
  - At the end, displays the total number of files found
2. Create a batch file that implements a simple menu system with at least 3 options, each performing a different operation (e.g., display system info, create backup, show disk space).
3. Write a batch script that:
  - Checks if a service is running (take service name as parameter)
  - If running, stops it and logs the action with timestamp
  - If not running, starts it and logs the action
  - All logs should be appended to a file with the current date as filename

## 5 Debugging (20 points)

The following batch file has several errors. Identify and fix them:

```
1 @echo off
2 set count=0
3 for %%f in (*.doc) do (
4     echo Processing %%f
5     set /a count+=1
6 )
7 echo Total files processed: %count%
8 if %count% gtr 5 (
9     echo More than five files found
10 ) else (
11     echo Five or fewer files found
12 )
```

## 6 Advanced Concepts (20 points)

1. Explain how to handle special characters in file paths within batch files.
2. Describe the process of creating a self-deleting batch file.
3. How would you implement a timeout feature that waits for user input but continues after 30 seconds if no input is received?
4. Explain the difference between `set`, `set /a`, and `set /p`.
5. How can you parse and process the output of another command in a batch file?

## 7 Practical Scenario (20 points)

You are tasked with creating a maintenance batch file for a Windows server. Describe what functionality you would include and provide the skeleton code structure for such a script. Consider:

- Logging mechanisms
- Error handling
- Common maintenance tasks
- Notification system
- Scheduling considerations

## 8 Extra Credit (10 points)

Create a batch file that generates another batch file based on user input and then executes it. Describe a practical use case for this technique.