
# S.B. JAIN INSTITUTE OF TECHNOLOGY MANAGEMENT & RESEARCH, NAGPUR

## Practical 03

**Aim:** Automate student marksheet generation, system information display, Fibonacci and prime number generation, and file management operations using shell scripts to enhance computational efficiency and user interaction.

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- **Aim:** Automate student marksheet generation, system information display, Fibonacci and prime number generation, and file management operations using shell scripts to enhance computational efficiency and user interaction.

- **Tasks to be done in this Practical.**

a) Write a shell script to generate mark- sheet of a student. Take 3 subjects, calculate and display total marks, percentage and Class obtained by the student.

b) Write a menu driven shell script which will print the following menu and execute the given task.
   - Display calendar of current month.
   - Display usernames those are currently logged in the system.

c) Write a shell script which will generate first n Fibonacci numbers like: 1, 1, 2, 3, 5, 13

d) Write menu driven program for file handling activity
   - Creation of file.
   - Write content in the file.
   - Upend file content.
   - Delete file content

- **Objectives:**
  1. Automate marksheet generation with total, percentage, and class classification.
  2. Develop menu-driven scripts for system information and file operations.
  3. Generate Fibonacci and prime numbers for user-defined inputs.

- **Requirements:**
  - ✓ **Hardware Requirements:**

- Processor: Minimum 1 GHz
- RAM: 512 MB or higher
- Storage: 100 MB free space

  - ✓ **Software Requirements:**

- Operating System: Linux/Unix-based
- Shell: Bash 4.0 or higher
- Text Editor: Nano, Vim, or any preferred editor

## ❖ Theory:

Shell scripting is a powerful way to automate repetitive tasks and manage system operations efficiently. It allows users to write programs using shell commands and scripting constructs. Shell scripts are interpreted line-by-line by a shell interpreter, making them ideal for administrative tasks, file management, and system automation.

### 1. Marksheet Generation

This script takes input marks for three subjects, calculates the total marks, percentage, and determines the class of the student based on predefined conditions. Conditional statements (if-else) are used to classify the performance into distinction, first class, second class, or fail.

Key concepts include:

- Reading user input using read
- Arithmetic operations with $((expression))
- Conditional statements for decision-making

### 2. Menu-Driven Script for System Information

Menu-driven scripts enhance user interaction by presenting a list of options for performing different tasks. In this practical, options are provided to display the calendar of the current month, the current date and time, logged-in users, and the terminal number.

**Commands used:**

- cal for displaying the calendar
- date for showing current date and time
- who to list logged-in users


### 3. Fibonacci Number Generation

Fibonacci numbers are a sequence where each term is the sum of the two preceding ones. The script uses iterative constructs (for loop) to generate n terms based on user input. This practical illustrates the use of loop control and variable swapping to generate series data efficiently.

### 4. Prime Number Display

This script accepts an integer n and outputs the first n prime numbers. A nested loop checks divisibility to determine if a number is prime. The practical demonstrates logic building for number-theoretic operations using loops and conditionals.

**5. Menu-Driven File Management**

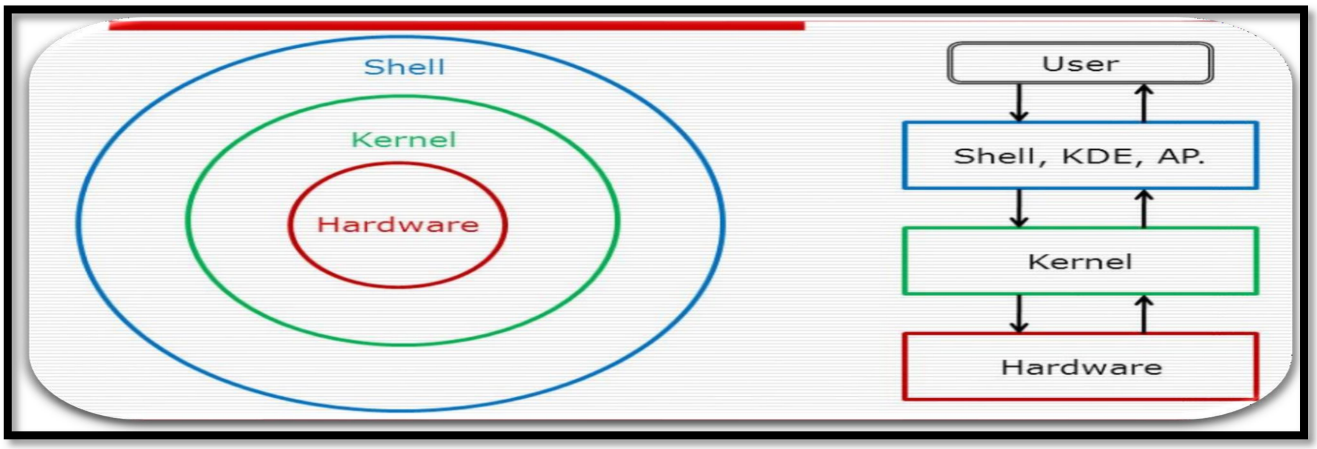
The file handling script enables users to create, write, append, and delete file content. The case construct manages different file operations.

Commands include:

- touch to create files
- cat for writing and appending content
- rm for deleting files

This exercise emphasizes text manipulation, input handling, and file control mechanisms in Unix-like environments.

➢ **Diagrammatical View of Shell**




➢ **CODES**

1. **Write a shell script to generate mark- sheet of a student. Take 3 subjects, calculate and display total marks, percentage and Class obtained by the student.**

**2. Write a menu driven shell script which will print the following menu execute the given task.**

- **Display calendar of current month.**
- **Display today's date and time.**
- **Display usernames those are currently logged in the system.**
- **Display your terminal number**

**3. Write a shell script which will generate first n Fibonacci numbers like: 1, 1, 2, 3, 5, 13**

**4. Write a shell script which will accept a number b and display first n prime Nunbers of integer**

**5. Write menu driven program for file handling activity**

- **Creation of file.**
- **Write content in the file.**
- **Upend file content.**
- **Delete file content.**

❖ **Conclusion**: In this practical, we conclude that shell scripting efficiently automates tasks like marksheet generation, system information display, number computations, and file management, enhancing system operations and user interaction through command-line utilities.

❖ **Discussion Questions:**

1. **What is the purpose of using shell scripting in this practical?**
2. **Which command is used to display the current date and time?**
   **How does the script calculate the Fibonacci sequence?**
3. **Which command is used to create a file in the file management script?**
4. **How does the prime number script determine if a number is prime?**

❖ **References:**

*https://www.tutorialspoint.com/unix/shell_scripting.html*
*https://www.javatpoint.com/shell-scripting-tutorial*

**Signature**
Course Coordinator
B.Tech CSE(AIML)

**Date: /  /2026**

Outputs:

1)

```
MINGW64:/c/Users/intel

intel@DESKTOP-T8KMP91 MINGW64 ~
$ nano marksheet.sh

intel@DESKTOP-T8KMP91 MINGW64 ~
$ chmod +x marksheet.sh

intel@DESKTOP-T8KMP91 MINGW64 ~
$ ./marksheet.sh
Enter marks of 3 subjects:
20
30
50
Total marks: 100
Percentage: 33%
Class: Fail
```

2)

```
MINGW64:/c/Users/intel
intel@DESKTOP-T8KMP91 MINGW64 ~
$ nano fibonacci.sh

intel@DESKTOP-T8KMP91 MINGW64 ~
$ chmod +x fibonacci.sh

intel@DESKTOP-T8KMP91 MINGW64 ~
$ ./fibonacci.sh
---- MENU ----
1. Display calendar of current month
2. Display today's date and time
3. Display logged in users
4. Display terminal number
5. Exit
Enter your choice:
1
./fibonacci.sh: line 15: cal: command not found
---- MENU ----
1. Display calendar of current month
2. Display today's date and time
3. Display logged in users
4. Display terminal number
5. Exit
Enter your choice:
2
Sat Feb 14 21:05:07 IST 2026
---- MENU ----
1. Display calendar of current month
2. Display today's date and time
3. Display logged in users
4. Display terminal number
5. Exit
Enter your choice:
3
---- MENU ----
1. Display calendar of current month
2. Display today's date and time
3. Display logged in users
4. Display terminal number
5. Exit
Enter your choice:
3
---- MENU ----
1. Display calendar of current month
2. Display today's date and time
3. Display logged in users
4. Display terminal number
5. Exit
```

**4)**

```
MINGW64:/c/Users/intel

intel@DESKTOP-T8KMP91 MINGW64 ~
$ nano prime.sh

intel@DESKTOP-T8KMP91 MINGW64 ~
$ chmod +x prime.sh

intel@DESKTOP-T8KMP91 MINGW64 ~
$ ./prime.sh
Enter value of n:
5
First 5 prime numbers:
2 3 5 7 11
```

**3)**

```
intel@DESKTOP-T8KMP91 MINGW64 ~
$ nano fibo.sh

intel@DESKTOP-T8KMP91 MINGW64 ~
$ chmod +x fibo.sh

intel@DESKTOP-T8KMP91 MINGW64 ~
$ ./fibo.sh
Enter number of terms:
25
Fibonacci series:
1 1 2 3 5 8 13 21 34 55 89 144 233 377 610 987 1597 2584 4181 6765 10946 17711 28657 46368 75025
```

```
$ nano filemenu.sh

intel@DESKTOP-T8KMP91 MIN
$ chmod +x filemenu.sh

intel@DESKTOP-T8KMP91 MIN
$ ./filemenu.sh
Enter file name:
sayali
---- FILE MENU ----
1. Create file
2. Write content
3. Append content
4. Delete file
5. Exit
1
File created.
---- FILE MENU ----
1. Create file
2. Write content
3. Append content
4. Delete file
5. Exit
2
Enter content:
my name is sayali
Content written.
---- FILE MENU ----
1. Create file
2. Write content
3. Append content
4. Delete file
5. Exit
3
Enter content to append:
 Misal CM25D007
Content appended.
---- FILE MENU ----
1. Create file
2. Write content
3. Append content
4. Delete file
5. Exit
4
File deleted.
---- FILE MENU ----
1. Create file
2. Write content
3. Append content
4. Delete file
5. Exit
5
```