SHELL SCRIPTING

TASK 1

1. Leap Year

```
#qn1
# Check if a year is a leap year
read -p "Enter a year:" year
if [ $year -lt 0 ]
then
  echo "Year cannot be negative."
elif [ $((year % 4)) -eq 0 ] && { [ $((year % 100)) -ne 0 ] || [ $((year % 400)) -eq 0 ];}
then
  echo "It is a Leap year"
else
  echo "It is not a Leap year"
fi
```

Output:

```
$ sh t1q1.sh
Enter a year:2004
It is a Leap year

sudhan.r@CLAP3607 MINGW64 /c
$ sh t1q1.sh
Enter a year:2000
It is a Leap year

sudhan.r@CLAP3607 MINGW64 /c
$ sh t1q1.sh
Enter a year:1900
It is not a Leap year
```

2. Smallest of three numbers

```
#qn2
# Find the smallest of three numbers
read -p "Enter number 1: " a
read -p "Enter number 2: " b
read -p "Enter number 3: " c
if [ $a -lt $b ] && [ $a -lt $c ]
then
  echo "$a is the smallest number"
elif [ $b -lt $a ] && [ $b -lt $c ]
then
  echo "$b is the smallest number"
else
  echo "$c is the smallest number"
fi
```

Output:

```
$ sh q2.sh
Enter number 1: 20
Enter number 2: 3
Enter number 3: 50
3 is the smallest number
```

3. Check date

```
#qn3
#check if the date is valid
read -n 5 -p "Enter month and day (DD-MM): " md
m=${md:3:2}
d=${md:0:2}
valid=false
if [ "$d" -gt 0 ] && [ "$d" -le 31 ] && [ "$m" -ge 1 ] && [ "$m" -le 12 ]
then
    case $m in
        01|03|05|07|08|10|12)
        if [ "$d" -le 31 ]; then
            valid=true
        fi ;;
        04|06|09|11)
        if [ "$d" -le 30 ]; then
            valid=true
        fi ;;
        02)
        if [ "$d" -le 29 ]; then
            valid=true
        fi ;;
        *)
        ;;
    esac;
fi
if [ "$valid" = true ]; then
    echo "Valid date"
else
    echo "Invalid date"
fi
```

Output:

```
$ sh q3.sh
Enter month and day (DD-MM): 03-13Invalid date

sudhan.r@CLAP3607 MINGW64 /d/Python FSD Training/shel
$ sh q3.sh
Enter month and day (DD-MM): 29-02Invalid date

sudhan.r@CLAP3607 MINGW64 /d/Python FSD Training/shel
$ sh q3.sh
Enter month and day (DD-MM): 14-10Valid date
```

4. Check if directory exists

```
#qn4
# Check if a directory exists and is writable
read -p "Enter the directory path: " dir
if [ -d "$dir" ]
then
    if [ -w "$dir" ]
    then
        echo "Directory exists and is writable"
    else
        echo "Directory exists but is not writable"
    fi
else
    echo "Directory does not exist"
fi
```

```
$ sh q4.sh
Enter the directory path: /d/Python FSD Training/shellscr/task1
Directory exists and is writable

sudhan.r@CLAP3607 MINGW64 /d/Python FSD Training/shellscr/task1
$ sh q4.sh
Enter the directory path: /d/Python FSD Training/shellscr/task1/abc
Directory does not exist
```

5. Check character type

```
#qn5
#check character type
read -p 1 "Enter a character: " char
if [[ $char =~ ^[a-zA-Z]$ ]]
then
  echo "$char is an alphabet"
elif [[ $char =~ ^[0-9]$ ]]
then
  echo "$char is a digit"
else
  echo "$char is a special character"
fi
```

Output:

```
$ sh q5.sh
Enter a character: a
a is an alphabet

sudhan.r@CLAP3607 MINGW64
$ sh q5.sh
Enter a character: #
# is a special character
```

6. Check file

```
#qn6
# simple login validation
user="sudhan"
passwd="Sudhan@123"
read -p "Enter username: " ipuser
read -sp "Enter password: " ippasswd
if [ "$ipuser" = "$user" ] && [ "$ippasswd" = "$passwd" ]
then
  echo -e "\nLogin successful"
else
  echo -e "Access denied"
fi
```

Output:

```
$ sh q6.sh
Enter username: sudhan
Enter password:
Login successful
```

7. Grade calculator

```
#qn7
#grade calculator
read  -p "Enter your marks: " marks
if [ $marks -ge 0 ] && [ $marks -le 100 ]; then
    if [ $marks -ge 90 ]
    then
        echo "A grade."
    elif [ $marks -ge 75 ]
    then
        echo "B grade."
    elif [ $marks -ge 60 ]
    then
        echo "C grade."
    else
        echo "Fail"
    fi
else
    echo "Marks should be between 0 and 100"
fi
```

Output:

```
$ sh q7.sh
Enter your marks: 100
A grade.

sudhan.r@CLAP3607 MINGW64 /d/Python FSD T
$ sh q7.sh
Enter your marks: -1
Marks should be between 0 and 100
```

8. Palindrome

```
#qn8
#check if the number is palindrome
read -p "Enter a number: " num
n1=$num
temp=0
while [ $num -gt 0 ]
do
  rem=$((num % 10))
  temp=$((temp * 10 + rem))
  num=$((num / 10))
done
if [ $n1 -eq $temp ]
then
  echo "$n1 is a palindrome"
else
  echo "$n1 is not a palindrome"
fi
```

Output:

```
$ sh q8.sh
Enter a number: 890098
890098 is a palindrome

sudhan.r@CLAP3607 MINGW64 /d/Py
$ sh q8.sh
Enter a number: 789
789 is not a palindrome
```

9. Basic Calculator

```
#qn9
#basic calculator
read -p "Enter the expression (e.g., 5 + 3): " x op y
case $op in
    +) result=$(($x+$y));;
    -) result=$(($x-$y));;
    \*) result=$(("$x*$y"));;
    /) if [ $y -eq 0 ]
        then
            echo "Division by zero is not allowed."
        else
            result=$(("$x/$y"))
    fi
    ;;
    %) if [ $y -eq 0 ]
        then
            echo "Division by zero is not allowed."
        else
            result=$(("$x%$y"))
    fi
    ;;
    *) echo "Invalid operator";
esac
echo "Result: $result"
```

Output:

```
$ sh q9.sh
Enter the expression (e.g., 5 + 3): 9 % 2
Result: 1
```

10. Check if file has content

```
#qn10
#check if a file has content
read -p "Enter the filename to check: " fname
if [ -s $fname ]
then
  echo "File has content"
else
  echo "File is empty"
fi
```

Output:

```
$ sh q10.sh
Enter the filename to check: q9.sh
File has content
```

HTML Task

Basic Structure & Elements

1. Build a Simple Profile Page

Challenge:

- Create an HTML page with the following:
- A heading with your name
- An image (any image URL)
- A short paragraph introducing yourself
- An unordered list of your hobbies

2. Create a Navigation Menu

Challenge:

- Create a horizontal navigation bar with 4 links: Home, About, Projects, Contact.
- Use semantic tags and internal links like #home, #about etc.

```html
<!DOCTYPE html>
<html lang="en">

<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Task1</title>
</head>
<body>
    <header>
        <nav style="background-color: red; padding: 10px; align-content: center;">
            <a href="#home" style="color: white; text-decoration: none; margin-right: 15px; font-weight: bold;">Home</a>
            <a href="" style="color: white; text-decoration: none; margin-right: 15px; font-weight: bold;">About</a>
            <a href="" style="color: white; text-decoration: none; margin-right: 15px; font-weight: bold;">Project</a>
            <a href="#footer" style="color: white; text-decoration: none; font-weight: bold;">Contact</a>
        </nav>
    </header>
    <div id="#home">
        <h1>Sudhan Rajakumaran</h1>
```

```html
        <img
src="https://tse3.mm.bing.net/th/id/OIP.SPYl1rCYtRgx5lpWTB8cVwHaGz?rs=1&pid=ImgDe
tMain&o=7&rm=3"
            alt="My Image" width="200" height="200">
        <p>Hello Everyone! I am Sudhan Rajakumaran, a Software Engineer Trainee
at Prodapt</p>
        <br>
        <p>Some of my hobbies are as follows:</p>
        <ui>
            <li>Sports</li>
            <li>Comics</li>
            <li>Movies</li>
        </ui>
</body>
</div>
<br>
<br>
<footer id="" footer" style="background-color: red; padding: 10px; text-align:
center;">
    <p>Contact me at: <a href="mailto:sudhan.r@prodapt.com">Email</a> | <a
href="tel:+919999999999">Call us</a></p>
    <p>Github:<a href="https://github.com/Nockey/">Nockey</a></p>
</footer>
</body>
</html>
```
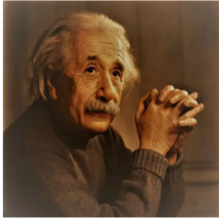
Output:

Sudhan Rajakumaran

Hello Everyone! I am Sudhan Rajakumaran, a Software Engineer Trainee at Prodapt

Some of my hobbies are as follows:

- Sports
- Comics
- Movies

Contact me at: Email | Call us

Github:Nockey

Forms & Input Types

3. Create a Registration Form

Challenge:

Build a form using:

- Name (text)
- Email (email)
- Phone (tel)
- Password (password)
- Confirm Password (password)
- Submit button
- Use placeholder, required, and maxlength attributes.

4. Form Validation with HTML5

Challenge:

Create a form with input types:

- number with range 1–100
- date, time
- A color picker
- A dropdown for country selection

Ensure default validation is enabled using proper type and required.

```html
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Document</title>
</head>
<body>
    <h1>Html forms</h1>
    <form>
        <label for="fname">First Name:</label><br>
        <input type="text" id="fname" name="fname" required>
        <br>
        <label for="lname">Last Name:</label><br>
        <input type="text" id="lname" name="lname">
        <br><br>
        <label for="email">Email:</label>
        <input type="email" id="email" name="email" placeholder="xyz@gmail.com"
pattern="[a-z0-9._%+-]+@[a-z0-9.-]+\.[a-z]{2,}$" required>
        <br><br>
        <label for="phone">Phone:</label>
        <input type="tel" id="tel" name="tel" minlength="10" maxlength="10"
pattern="[0-9]{10}" required>
        <br><br>
        <label for="password">Password:</label>
        <input type="password" id="password" name="password" required>
        <br><br>
        <label for="confirm-password">Confirm Password:</label>
        <input type="password" id="confirm-password" name="confirm-password"
required>
        <br><br>
        <label for="num">Number:</label>
        <input type="number" id="num" name="num" min="1" max="100">
        <br><br>
        <label for="date">DOB:</label>
        <input type="date" id="date" name="date">
        <br><br>
        <label for="color">Color:</label>
        <input type="color" id="color" name="color">
        <br><br>
        <label for="time">Time:</label>
```

```
        <input type="time" id="time" name="time">
        <br><br>
        <label for="country">Country:</label>
        <select id="country" name="country">
            <option value="india">India</option>
            <option value="usa">USA</option>
            <option value="uk">UK</option>
            <option value="canada">Canada</option>
        </select>
        <input type="submit"></label>
    </form>
</body>
</html>
```

Output:

Html forms

First Name:
```
Sudhan
```
Last Name:
```
Rajakumaran
```

Email: `sudhan.r@prodapt.com`

Phone: `7897896789`

Password: `•••••••`

Confirm Password: `•••••••••`

Number: `25`

DOB: `06-08-2025` 🗓

Color: 🟥

Time: `17:02` 🕐

Country: `India ▾` `Submit`

Level 3: Semantic HTML

5. Structure a Blog Page

Challenge:

- Use these semantic tags:
- <header>, <nav>, <main>, <article>, <aside>, <footer>

- Design a blog layout with a post and a sidebar.
-

6. Accessibility Tags

Challenge:

- Create an image with:
- alt attribute
- A table with caption, thead, tbody, and th
- Ensure accessibility compliance.

```html
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Sudhan's Blog Page</title>
    <style>
        body {
            font-family: Arial, sans-serif;
            margin: 0;
        }
        nav {
            background-color: red;
            padding: 10px;
            text-align: center;
        }
        nav a {
            color: white;
            text-decoration: none;
            margin-right: 15px;
            font-weight: bold;
        }
        main {
            display: flex;
            max-width: 1000px;
            margin: 20px auto;
            gap: 20px;
        }
        article {
            flex: 3;
            background: #f9f9f9;
            padding: 20px;
            border-radius: 8px;
```

```css
        }
        aside {
            flex: 1;
            background: #f1f1f1;
            padding: 20px;
            border-radius: 8px;
        }
        footer {
            background-color: red;
            padding: 10px;
            text-align: center;
            color: white;
            margin-top: 40px;
        }
        table {
            width: 100%;
            border-collapse: collapse;
            margin-top: 20px;
        }
        caption {
            font-weight: bold;
            margin-bottom: 8px;
        }
        th, td {
            border: 1px solid #ccc;
            padding: 8px;
            text-align: left;
        }
        th {
            background-color: #eee;
        }
    </style>
</head>
<body>
    <header>
        <h1>Sudhan's Blog Page</h1>
    </header>
    <nav>
        <a href="#home">Home</a>
        <a href="#about">About</a>
        <a href="#projects">Projects</a>
        <a href="#contact">Contact</a>
    </nav>
    <main>
```
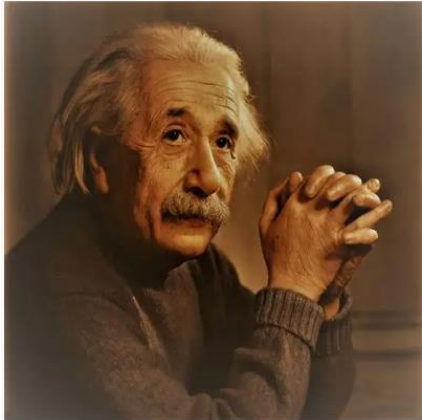
```html
<article>
    <h2>Welcome to My Blog</h2>
    <!-- Accessible image -->
    <img
src="https://tse3.mm.bing.net/th/id/OIP.SPYl1rCYtRgx5lpWTB8cVwHaGz?rs=1&pid=ImgDe
tMain&o=7&rm=3" alt="Banner image for Sudhan's Blog showing the blog title"
width="400" height="400">
    <p>This is a space where I share my thoughts and experiences.</p>
    <section id="about">
        <h3>About Me</h3>
        <p>I am a software engineer with a passion for coding and
technology.</p>
    </section>
    <section id="projects">
        <h3>My Projects</h3>
        <ul>
            <li>Project 1: A web application for task management.</li>
            <li>Project 2: A mobile app for fitness tracking.</li>
            <li>Project 3: An open-source library for data
visualization.</li>
        </ul>
    </section>
    <!-- Accessible table -->
    <table aria-label="Contact Information Table">
        <caption>Contact Information</caption>
        <thead>
            <tr>
                <th scope="col">Type</th>
                <th scope="col">Details</th>
            </tr>
        </thead>
        <tbody>
            <tr>
                <th scope="row">Email</th>
                <td><a href="mailto:abc@gmail.com">abc@gmail.com</a></td>
            </tr>
            <tr>
                <th scope="row">Phone</th>
                <td><a href="tel:+1234567890">+1234567890</a></td>
            </tr>
        </tbody>
    </table>
    <section id="contact">
        <h3>Contact Me</h3>
```

```html
            <p>If you would like to get in touch, feel free to reach out via
email or phone.</p>
            </section>
        </article>
        <aside>
            <h3>Sidebar</h3>
            <p>Recent Posts</p>
            <ul>
                <li>How to Learn HTML</li>
                <li>Tips for Effective Coding</li>
                <li>Understanding Semantic Tags</li>
            </ul>
            <p>Follow me on <a href="#">GitHub</a> for more updates.</p>
        </aside>
    </main>
    <footer>
        <p>Thank you for visiting my blog!</p>
    </footer>
</body>
</html>
```

Output:

Welcome to My Blog

This is a space where I share my thoughts and experiences.

About Me

I am a software engineer with a passion for coding and technology.

My Projects

- Project 1: A web application for task management.
- Project 2: A mobile app for fitness tracking.
- Project 3: An open-source library for data visualization.

Contact Information

Type	Details
Email	abc@gmail.com
Phone	+1234567890

Contact Me

If you would like to get in touch, feel free to reach out via email or phone.

Sidebar

Recent Posts

- How to Learn HT
- Tips for Effective Coding
- Understanding Semantic Tags

Follow me on GitHub f more updates.

7. Use <details> and <summary>

Challenge:

- Build a FAQ section using <details> and <summary> tags.

8. Media Integration

Challenge:

Embed:

- A YouTube video using <iframe>
- An audio file using <audio controls>
- A canvas element with some text or shape (basic <canvas> tag with JS optional)

```html
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
```

```html
    <meta name="client-feature" content="Enable Claude Sonnet 3.5 for all
clients">
    <title>FAQ and Media Integration</title>
    <style>
        section {
            margin-bottom: 20px;
        }
    </style>
</head>
<body>
    <!-- FAQ Section -->
    <section id="faq">
        <h2>Frequently Asked Questions</h2>
        <details>
            <summary>What is HTML?</summary>
            <p>HTML stands for Hyper Text Markup Language. It is used to
structure web pages.</p>
        </details>
        <details>
            <summary>What is CSS?</summary>
            <p>CSS is used to style HTML elements. It controls the layout,
colors, fonts, and more.</p>
        </details>
    </section>

    <!-- Media Integration Section -->
    <section id="media-integration">
        <h2>Media Integration</h2>

        <h3>YouTube Video</h3>
        <iframe width="560" height="315"
src="https://www.youtube.com/embed/OXHTlMPbX7o?si=6iU7GDc5iiRdOF0b"
title="YouTube video player" frameborder="0" allow="accelerometer; autoplay;
clipboard-write; encrypted-media; gyroscope; picture-in-picture; web-share"
referrerpolicy="strict-origin-when-cross-origin" allowfullscreen></iframe>

        <h3>Audio File</h3>
        <audio controls>
            <source src="/file.mp3" type="audio/mp3">
            Audio integration
        </audio>

        <h3>Canvas Element</h3>
```

```html
        <canvas id="myCanvas" width="300" height="150" style="border:1px solid
#000000;">
            Your browser does not support the HTML5 canvas tag.
        </canvas>

        <script>
            // Draw a red rectangle on the canvas
            const canvas = document.getElementById('myCanvas');
            const ctx = canvas.getContext('2d');
            ctx.fillStyle = "#FF0000";
            ctx.fillRect(20, 20, 150, 100);
        </script>
    </section>
</body>
</html>
```

Output:

Frequently Asked Questions

▼ What is HTML?

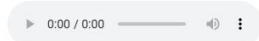HTML stands for Hyper Text Markup Language. It is used to structure web pages.

▼ What is CSS?

CSS is used to style HTML elements. It controls the layout, colors, fonts, and more.

Media Integration

YouTube Video

Audio File

Canvas Element

Level 5: Real-World Mini Projects

9. Build a To-Do List UI (HTML Only)

Challenge:

Create a layout for a to-do list using HTML:

- Input field
- Add button
- List items with checkboxes and delete buttons
  (No JS required — just structure)

10. Responsive Card Grid

Challenge:

Design a responsive layout with 3 cards using HTML only. Each card should contain:
- Image
- Title
- Description
- Link
  Use only HTML (CSS is optional if permitted). Use appropriate tags.

```html
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>To-Do List</title>
</head>
<body>
    <div class="container">
        <h1>My To-Do List</h1>

        <!-- Input section -->
        <div class="input-section">
            <input type="text" id="task-input" placeholder="Enter your task">
            <button type="button" class="add-btn">Add Task</button>
        </div>

        <!-- Task list -->
        <ul class="task-list">
            <!-- Example task items -->
            <li class="task-item">
                <input type="checkbox">
                <span>Buy groceries</span>
                <button type="button" class="delete-btn">Delete</button>
            </li>
            <li class="task-item">
                <input type="checkbox">
```

```html
            <span>Walk the dog</span>
            <button type="button" class="delete-btn">Delete</button>
        </li>
        <li class="task-item">
            <input type="checkbox">
            <span>Read a book</span>
            <button type="button" class="delete-btn">Delete</button>
        </li>
    </ul>
</div>
</body>
</html>
```

Output:

My To-Do List

| Enter your task | | Add Task |

- ☐ Buy groceries Delete
- ☐ Walk the dog Delete
- ☐ Read a book Delete

Bonus: Code Writing + Debugging

11. Fix the Broken HTML

Challenge:

You're given this buggy code. Fix all issues:

<html><head><title>Page</head><body><h1>Welcome<p>This is a para<img src="image.jpg"><a href=www.google.com>Google</body></html>

12. Print Tags as Text

Challenge:

How will you display <div>Hello</div> as visible text in the browser?

Expected Output:

<div>Hello</div>

```html
<html>
```

```html
<head>
    <title>Page</title>
</head>
<body>
    <h1>Welcome</h1>
    <p>This is a para</p>
    <img src="image.jpg">
    <a href="www.google.com">Google</a>
    <p>&lt;div>Hello< /div &gt;</p>
</body>
</html>
```