

**Department of Information Technology Assignment**

**Date:** 22/04/2025 **Subject:** Web Application Development (2024-25)

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| **Q. No.** | **Question** | **Mapping with CO** | **Marks** |
| Q.1) | Illustrate the need Puppeteer Package | CO2 | 10 |
| Q.2) | Implement small application which will make use of mentioned package (I/p, O/p) | CO1,CO2 | 10 |
| Q.3) | Illustrate the need for code of ethics | CO1,CO2,CO3 | 5 |

**SOLUTION**

### ****Q1) Illustrate the need for the Puppeteer Package****

### ****Answer:****

Puppeteer is a Node.js library developed by the Google Chrome team that provides a high-level API to control headless (or full) Chrome or Chromium over the DevTools Protocol. It is mainly used for automating web page interactions, scraping data, testing user interfaces, generating PDFs/screenshots, and simulating user behavior.

#### ****Need for Puppeteer:****

1. **Web Automation:** Automates repetitive tasks like filling forms, navigation, clicking buttons, etc.
2. **Headless Testing:** Facilitates automated UI testing without launching a visible browser window.
3. **Web Scraping:** Extracts content from dynamic websites rendered via JavaScript.
4. **Performance Analysis:** Collects runtime metrics and performance insights.
5. **Content Rendering:** Generates screenshots or PDFs of webpages for documentation or archiving.
6. **End-to-End Testing:** Simulates complete user journeys in a browser for QA purposes.

#### ****Example Use Cases:****

1. Testing UI components in CI/CD pipelines
2. Capturing webpage screenshots for visual regression
3. Generating PDF invoices from HTML templates
4. Monitoring webpage performance for SEO

In summary, Puppeteer plays a crucial role in modern web development for building scalable, testable, and automated solutions.

### ****Q2) Implement a small application which will make use of the mentioned package (Input, Output)****

### ****Answer:****

#### ****Application Title:**** Webpage Screenshot Generator

#### ****Objective:****

To create a Node.js-based application that captures a full-page screenshot of a given URL using the Puppeteer package.

### ****Input:****

A website URL (e.g., https://www.wikipedia.org)

### ****Output:****

A PNG file named screenshot.png containing the captured webpage

**CODE :**

const puppeteer = require('puppeteer');

const takeScreenshot = async (url) => {

  if (!url) {

    console.log("Please provide a URL.");

    return;

  }

  const browser = await puppeteer.launch(); *// headless by default*

  const page = await browser.newPage();

  await page.goto(url, { waitUntil: 'networkidle2' }); *// wait till page is fully loaded*

  await page.screenshot({ path: 'screenshot.png', fullPage: true });

  console.log(`Screenshot saved as screenshot.png for URL: ${url}`);

  await browser.close();

};

const userUrl = process.argv[2]; *// take URL from command-line argument*

takeScreenshot(userUrl);

**OUTPUT :**

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### ****Q3) Illustrate the need for a Code of Ethics****

### ****Answer:****

A Code of Ethics serves as a foundational guide for professionals in the field of information technology. It defines the principles, values, and expected behaviors necessary to uphold the integrity and responsibility of the profession.

#### ****Need for a Code of Ethics:****

1. **Professional Integrity:** Ensures that developers act honestly and transparently in their work.
2. **Data Privacy and Security:** Encourages responsible handling of user data and personal information.
3. **Accountability:** Promotes taking ownership of one’s work, especially in critical systems.
4. **Respect and Fairness:** Reinforces respectful collaboration with peers and stakeholders, regardless of background.
5. **Avoiding Harm:** Urges IT professionals to avoid creating software that can cause harm to individuals or society.

#### ****Example Scenarios:****

1. Avoiding plagiarism in code development.
2. Not introducing hidden malware or unethical tracking features.
3. Reporting software vulnerabilities responsibly.

#### ****Conclusion:****

In a rapidly evolving technological world, adhering to a code of ethics ensures trust, credibility, and long-term sustainability in software development and digital innovation.