Practical – 7

GitHub Link: https://github.com/Devsharma511/NodeJs.git

1. Goal: Dynamically imports ESM files with JSON import assertions and fallback.

2. Tasks: Implement dynamicImport(file) that:

Supports .mjs, .js, ESM modules.

Allows importing JSON using assert {type: "json"}

Provides graceful fallback if module exports a default or named export.

Project Structure:

1. dynamic_import.mjs:

```javascript
import { pathToFileURL } from 'url';
import path from 'path';
import { fileURLToPath } from 'url';

const __filename = fileURLToPath(import.meta.url);
const __dirname = path.dirname(__filename);

async function dynamicImport(file) {
  try {
    const resolvedPath = path.resolve(__dirname, file);
    const fileUrl = pathToFileURL(resolvedPath).href;

    if (file.endsWith('.json')) {
      const module = await import(fileUrl, {
        with: { type: 'json' }
      });
      return module.default;
    } else if (file.endsWith('.js') || file.endsWith('.mjs')) {
      const module = await import(fileUrl);
      return module.default ?? module;
    } else {
      throw new Error('Unsupported file type: must be .js, .mjs, or .json');
    }
  } catch (err) {
    console.error(`Error importing ${file}:`, err);
    throw err;
  }
}

(async () => {
  const jsonData = await dynamicImport('./data/sample.json');
  console.log(' JSON Data:', jsonData);

  const jsModule = await dynamicImport('./modules/util.js');
  console.log(' JS Module Export:', jsModule);
})();
```

2. data/sample.json:

```json
{
  "app": "Practical 7",
  "version": "1.0.0",
  "author": "Devansh Sharma"
}
```

Practical-7 > data > {} sample.json > ▣ author

Output:

PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS   GITLENS

```
PS C:\Users\sharm\nodejs> cd Practical-7
PS C:\Users\sharm\nodejs\Practical-7> node  dynamic_import.mjs
  JSON Data: { app: 'Practical 7', version: '1.0.0', author: 'Devansh Sharma' }
  JS Module Export: [Module: null prototype] { greet: [Function: greet] }
PS C:\Users\sharm\nodejs\Practical-7>
```