Exercise 1: convert Lab13 Question2 to the Express application.

```
import express from "express";
import path from "path";
import url from "url";

const app = express();

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

route.get(["/home", "/"], (req, res, next) => {
  res.send("Welcome to my website");
});
route.get("/pdf", (req, res, next) => {
  const pdfPath = path.join(__dirname, "assets", "document.pdf");
  res.sendFile(pdfPath);
});
route.get("/image", (req, res, next) => {
  const imagePath = path.join(__dirname, "assets", "happy_cat.png");
  res.sendFile(imagePath);
});
route.get("/about", (req, res, next) => {
  const aboutPath = path.join(__dirname, "assets", "about.txt");
  res.sendFile(aboutPath);
});

app.use(route);

app.use((req, res, next) => {
  res.status(404).send("Page not found");
});

app.listen(3000, () => {
  console.log("running on port 3000");
});
```

Exercise 2: Write an Express application to provide a calculator API. •

There should be an API endpoint for each basic math operation: addition, subtraction, multiplication, division, and modulus. • Each endpoint will receive the input numbers and return a JSON response with the results as follows: { results: 0 }. Use the EchoAPI vscode extension or Postman to test your API endpoints. • The calculator router should be designed with flexibility to receive the input numbers as query parameters, parameters, or in the body as JSON or urlEncoded format, For example, all these requests will return the same results value { results: 5 }: o GET /addition/2/3 o GET /addition/?a=2&b=3 o POST /addition/ BODY ?a=2&b=3 o POST /addition/ BODY {a:2,b:3}

```
import express from "express";

const app = express();
const port = 3000;

app.use(express.json());
app.use(express.urlencoded({ extended: true }));

function getNumbers(req) {
  let a = req.params.a || req.query.a || req.body.a;
  let b = req.params.b || req.query.b || req.body.b;

  a = parseFloat(a);
  b = parseFloat(b);

  return { a, b };
}

app.get(["/addition/:a/:b", "/addition"], (req, res) => {
  const { a, b } = getNumbers(req);
  res.json({ results: a + b });
});
app.post("/addition", (req, res) => {
  const { a, b } = getNumbers(req);
  res.json({ results: a + b });
});

app.get(["/subtraction/:a/:b", "/subtraction"], (req, res) => {
  const { a, b } = getNumbers(req);
  res.json({ results: a - b });
});
```

```javascript
app.post("/subtraction", (req, res) => {
  const { a, b } = getNumbers(req);
  res.json({ results: a - b });
});

app.get(["/multiplication/:a/:b", "/multiplication"], (req, res) => {
  const { a, b } = getNumbers(req);
  res.json({ results: a * b });
});

app.post("/multiplication", (req, res) => {
  const { a, b } = getNumbers(req);
  res.json({ results: a * b });
});

app.get(["/division/:a/:b", "/division"], (req, res) => {
  const { a, b } = getNumbers(req);
  if (b === 0) return res.status(400).json({ error: "Division by zero" });
  res.json({ results: a / b });
});

app.post("/division", (req, res) => {
  const { a, b } = getNumbers(req);
  if (b === 0) return res.status(400).json({ error: "Division by zero" });
  res.json({ results: a / b });
});

app.get(["/modulus/:a/:b", "/modulus"], (req, res) => {
  const { a, b } = getNumbers(req);
  if (b === 0) return res.status(400).json({ error: "Division by zero" });
  res.json({ results: a % b });
});

app.post("/modulus", (req, res) => {
  const { a, b } = getNumbers(req);
  if (b === 0) return res.status(400).json({ error: "Division by zero" });
  res.json({ results: a % b });
});

app.listen(port, () => {
  console.log(`Calculator API is running at http://localhost:${port}`);
});
```