# CSC1037 – Debugging Practice (10 Tasks)

*Student Answer Template*

Instructions: For each task, write a short explanation of what is wrong with the original code, then write your corrected version of the code.

• Keep your explanation to 1–3 sentences.
• For the fixed code, you can rewrite only the relevant lines, or rewrite the full snippet.
• Use proper shell / Makefile syntax so that your fixed code would run.

## Shell Tasks

### S1 – Print a greeting (missing then)
**1) What is wrong?**

The if statement is missing "then" keyword

**2) Fixed code:**

#!/bin/bash

if [ "$#" -lt 1 ]; then

 echo "Usage: $0 NAME"

 exit 1

fi

echo "Hello, $1!"

### S2 – Check if a file exists
**1) What is wrong?**

The $1 and $FILE need quotes eg. "$1" to recognise filenames with spaces.

**2) Fixed code:**

#!/bin/bash

FILE="$1"

if [ -f "$FILE" ]; then

 echo "$FILE exists"

```
else
 echo "$FILE does not exist"
fi
```

## S3 – Loop from 1 to 3

### 1) What is wrong?

The sequence of numbers needs no brackets.

### 2) Fixed code:

```bash
#!/bin/bash
for i in 1 2 3; do
 echo "$i"
done
```

## S4 – Add two numbers

### 1) What is wrong?

Using the '+' operator concatenates the two chars. You must tell bash its an arithmetic operation by adding $((...))

### 2) Fixed code:

```bash
#!/bin/bash
A=$1
B=$2
SUM=$((A+B))
echo "Sum: $SUM"
```

# Makefile Tasks (2 tasks)

## M1 – Add .PHONY for clean

### 1) What is wrong?

Clean must be marked as .PHONY and given the ":" sperator.

**2) Fixed code:**

.PHONY clean:

      rm -f main

## M2 – Run a shell script with make

**1) What is wrong?**

Run target is missing .PHONY

**2) Fixed code:**

.PHONY run:

      sh build.sh

## Docker Tasks (3 tasks)

## D1 – Python app CMD (JSON form)

**1) What is wrong?**

CMD arguments must be separate strings

**2) Fixed code:**

FROM python:3.11-slim

WORKDIR /app

COPY app.py .

CMD ["python", "app.py"]

## D2 – COPY package files for npm install

**1) What is wrong?**

The docker file was copying one json file to another then copying the current directory to itself. Changed to copy both json files to current working directory before install.

**2) Fixed code:**

```
FROM node:20-alpine

WORKDIR /app

COPY package.json .

COPY package-lock.json .

RUN npm install

CMD ["node", "server.js"]
```

## D3 – docker-compose restart policy

**1) What is wrong?**

Missing ":" seperator between key and value "restart" and "always"

**2) Fixed code:**

```
version: "3.9"

services:

        web:

                image: nginx

                ports:

                 - "8080:80"

                restart: always
```

## Node.js Tasks (1 tasks)

## N1 – Create an Express app

**1) What is wrong?**

Missing function call parenthesis after const app = express

**2) Fixed code:**

```
const express = require("express");

const app = express();

app.get("/", (req, res) => {
```

```
 res.send("Hello DCU");

});

app.listen(3000, () => {

 console.log("Server listening on port 3000");

});
```