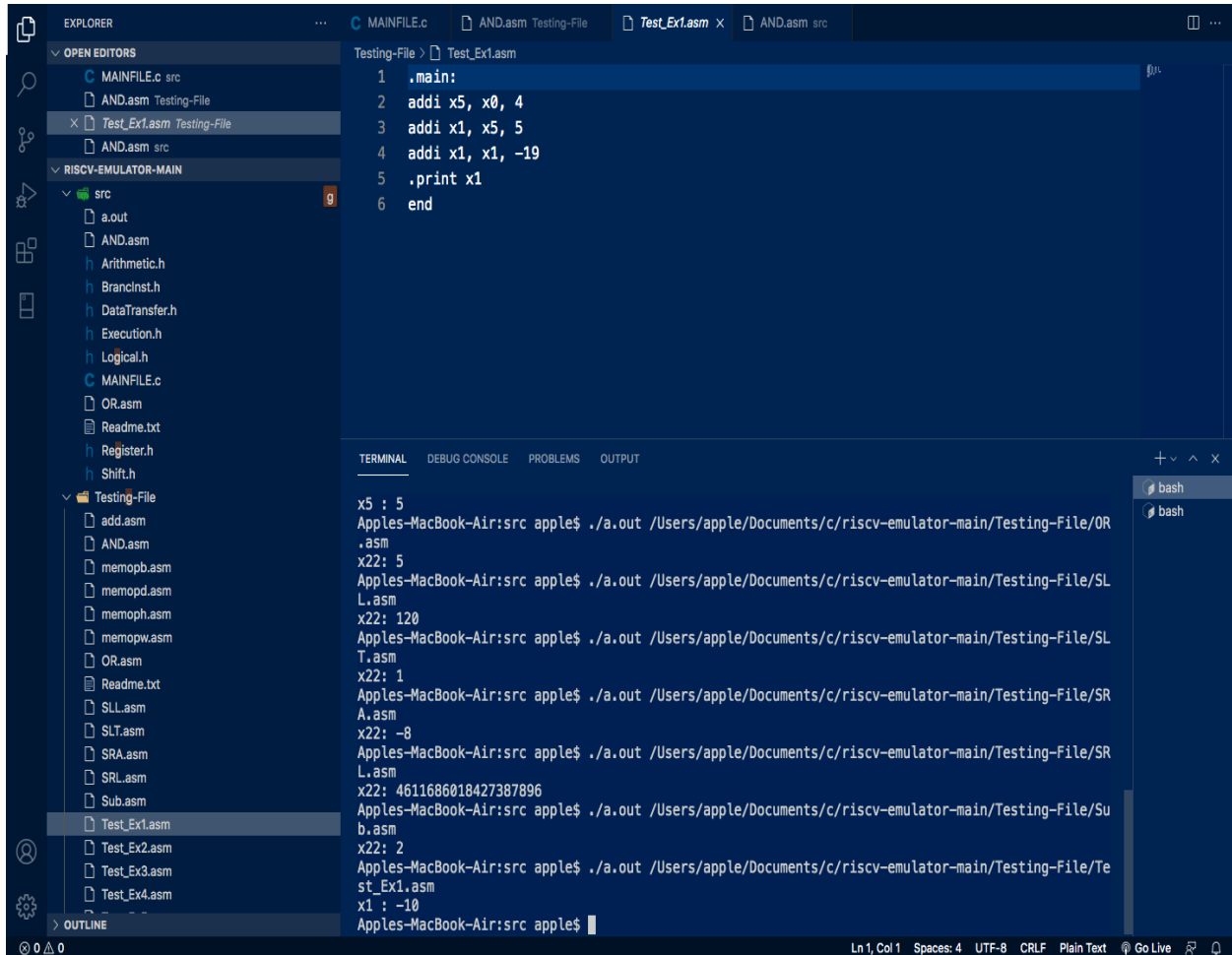


Program 1

This is a program of Addition operation run on the Designed Interpreter:-



The screenshot displays a code editor with a dark theme. The Explorer panel on the left shows a project structure with folders like 'RISCV-EMULATOR-MAIN' and 'Testing-File'. The main editor window shows the file 'Test_Ex1.asm' with the following assembly code:

```
1 .main:
2 addi x5, x0, 4
3 addi x1, x5, 5
4 addi x1, x1, -19
5 .print x1
6 end
```

The Terminal panel at the bottom shows the execution of the program. It displays the output of the assembly code, including register values and the final result of the addition operation:

```
x5 : 5
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/OR
.asm
x22: 5
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/SL
L.asm
x22: 120
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/SL
T.asm
x22: 1
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/SR
A.asm
x22: -8
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/SR
L.asm
x22: 4611686018427387896
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/Su
b.asm
x22: 2
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/Te
st_Ex1.asm
x1 : -10
Apples-MacBook-Air:src apple$
```

Program 2

This is a program of Subtraction operation run on the Designed Interpreter:-

The screenshot shows a code editor with the following components:

- EXPLORER:** A sidebar on the left showing a file tree. The 'Testing-File' directory is expanded, showing files like 'add.asm', 'AND.asm', 'memopb.asm', 'memopd.asm', 'memoph.asm', 'memopw.asm', 'OR.asm', 'Readme.txt', 'SLL.asm', 'SLT.asm', 'SRA.asm', 'SRL.asm', 'Sub.asm', 'Test_Ex1.asm', 'Test_Ex2.asm', 'Test_Ex3.asm', and 'Test_Ex4.asm'. The 'Sub.asm' file is selected.
- Editor:** The main area displays the content of 'Sub.asm':

```
1 .main:
2     addi x20, x0, 5
3     addi x21, x0, 3
4     sub x22, x20, x21
5     .print x22
6 end
```
- TERMINAL:** A panel at the bottom showing the execution output:

```
x5 : 5
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/me
mopw.asm
x5 : 5
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/OR
.asm
x22: 5
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/SL
L.asm
x22: 120
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/SL
T.asm
x22: 1
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/SR
A.asm
x22: -8
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/SR
L.asm
x22: 4611686018427387896
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/Su
b.asm
x22: 2
Apples-MacBook-Air:src apple$
```

Program 3

This is a program of AND operation run on the Designed Interpreter:-

The screenshot shows a code editor with the following components:

- EXPLORER:** A file tree on the left showing the project structure. The 'src' directory is expanded, showing files like 'Arithmetic.h', 'BranchInst.h', 'DataTransfer.h', 'Execution.h', 'Logical.h', 'MAINFILE.c', 'OR.asm', 'Readme.txt', 'Register.h', 'Shift.h', and a 'Testing-File' directory containing various assembly files.
- EDITOR:** The main window displays the content of 'AND.asm':

```
1 .main:
2     addi x20, x0, 5
3     addi x21, x0, 3
4     and x21, x20, x21
5     .print x21
6 end
```
- TERMINAL:** A terminal window at the bottom shows the execution of the program. The commands and output are:

```
Apples-MacBook-Air:src apple$ ./a.out AND.asm
x21: 1
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/add.asm
x22: 500
Apples-MacBook-Air:src apple$ ./a.out Testing-File/add.asm
Could not read file!!!
Apples-MacBook-Air:src apple$ ./a.out ./Testing-File/add.asm
Could not read file!!!
Apples-MacBook-Air:src apple$ ./a.out /Testing-File/add.asm
Could not read file!!!
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/add.asm;
```

Program 4

This is a program of OR operation run on the Designed Interpreter:-

The screenshot shows a code editor with a dark theme. The Explorer panel on the left shows a project structure with folders like 'OPEN EDITORS', 'RISCV-EMULATOR-MAIN', and 'Testing-File'. The main editor window displays the assembly file 'OR.asm' with the following code:

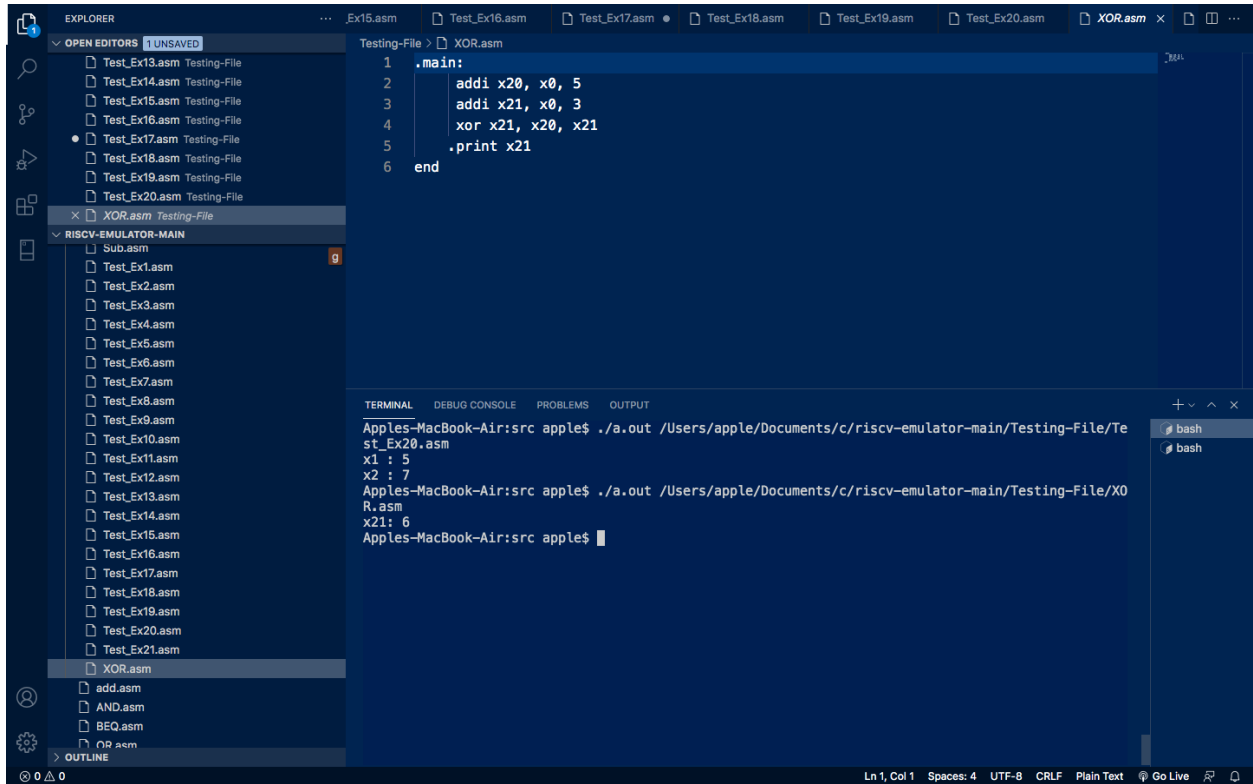
```
1 .main:
2     addi x20, x0, 4
3     addi x21, x0, 1
4     or x22, x20, x21
5     .print x22
6 end
```

Below the code editor is a terminal window showing the execution of the program. The output is as follows:

```
Could not read file!!!
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/ad
d.asm;
x22: 500
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/an
d.asm;
x21: 1
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/me
mopb.asm;
x5 : 5
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/me
mopd.asm
x5 : 5
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/me
moph.asm
x5 : 5
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/me
mopw.asm
x5 : 5
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/OR
.asm
x22: 5
Apples-MacBook-Air:src apple$
```

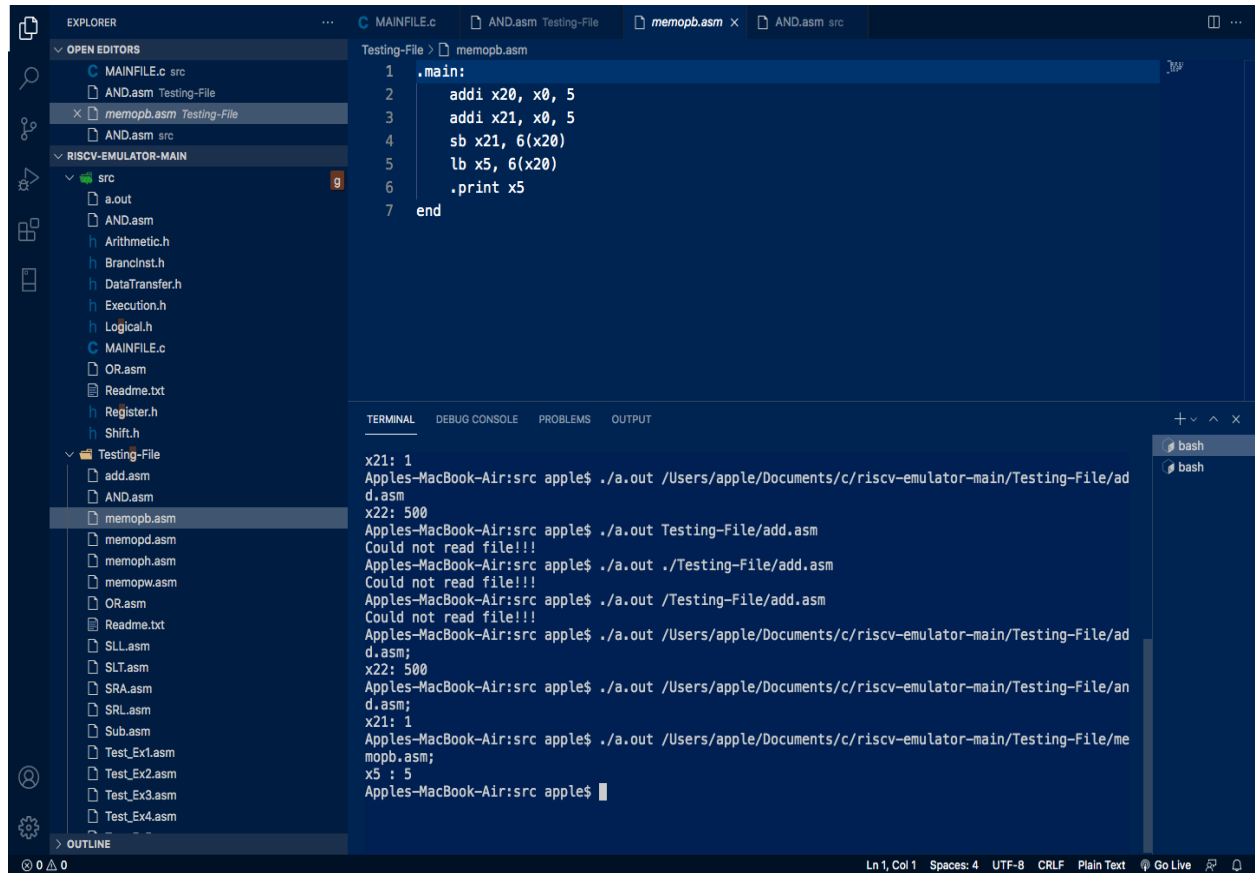
Program 5

This is a program of XOR operation run on the Designed Interpreter:-



Program 6

This is a program of Store Byte and Load Byte operation run on the Designed Interpreter:-



The screenshot shows a code editor with a dark theme. The Explorer panel on the left shows a project structure with folders like 'src' and 'Testing-File'. The main editor window displays the assembly file 'memopb.asm' with the following code:

```
1 .main:
2     addi x20, x0, 5
3     addi x21, x0, 5
4     sb x21, 6(x20)
5     lb x5, 6(x20)
6     .print x5
7 end
```

The terminal at the bottom shows the execution of the program. It displays the assembly code being executed and the output of the program, which is the value of register x5, 5.

```
x21: 1
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/add.d.asm
x22: 500
Apples-MacBook-Air:src apple$ ./a.out Testing-File/add.asm
Could not read file!!!
Apples-MacBook-Air:src apple$ ./a.out ./Testing-File/add.asm
Could not read file!!!
Apples-MacBook-Air:src apple$ ./a.out /Testing-File/add.asm
Could not read file!!!
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/add.d.asm;
x22: 500
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/add.d.asm;
x21: 1
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/memopb.asm;
x5 : 5
Apples-MacBook-Air:src apple$
```

Program 7

This is a program of Store Double and Load Double operation run on the Designed Interpreter:-

The screenshot shows an IDE with the following components:

- EXPLORER:** Displays a project structure with folders like 'src' and 'Testing-File'. The file 'memopd.asm' is selected.
- EDITOR:** Shows the assembly code for 'memopd.asm':

```
1 .main:
2     addi x20, x0, 5
3     addi x21, x0, 5
4     sd x21, 6(x20)
5     ld x5, 6(x20)
6     .print x5
7 end
```
- TERMINAL:** Shows the execution output:

```
x21: 1
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/ad
d.asm
x22: 500
Apples-MacBook-Air:src apple$ ./a.out Testing-File/add.asm
Could not read file!!!
Apples-MacBook-Air:src apple$ ./a.out ./Testing-File/add.asm
Could not read file!!!
Apples-MacBook-Air:src apple$ ./a.out /Testing-File/add.asm
Could not read file!!!
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/ad
d.asm;
x22: 500
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/an
d.asm;
x21: 1
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/me
mopb.asm;
x5 : 5
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/me
mopd.asm
x5 : 5
Apples-MacBook-Air:src apple$
```

Program 8

This is a program of Store Half and Load Half operation run on the Designed Interpreter:-

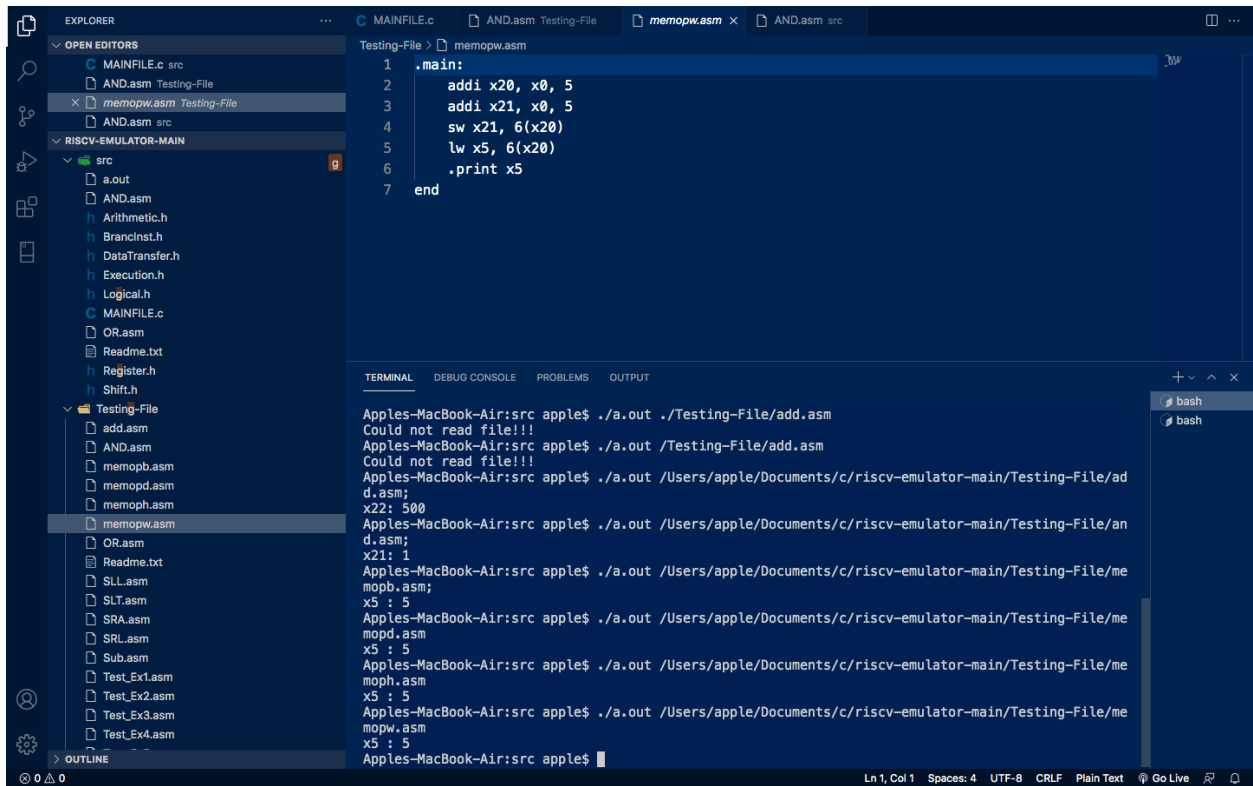
The screenshot shows a code editor with the following components:

- EXPLORER:** A file tree on the left showing the project structure. The 'Testing-File' folder is expanded, showing files like 'add.asm', 'AND.asm', 'memopb.asm', 'memoph.asm', 'memopw.asm', 'OR.asm', 'Readme.txt', 'SLL.asm', 'SLT.asm', 'SRA.asm', 'SRL.asm', 'Sub.asm', 'Test_Ex1.asm', 'Test_Ex2.asm', 'Test_Ex3.asm', and 'Test_Ex4.asm'. The 'memoph.asm' file is selected.
- Editor:** The main area displays the assembly code for 'memoph.asm':

```
1 .main:
2     addi x20, x0, 5
3     addi x21, x0, 5
4     sh x21, 6(x20)
5     lh x5, 6(x20)
6     .print x5
7 end
```
- TERMINAL:** A terminal window at the bottom shows the execution of the program. It displays the address 'x22: 500' and the output of the 'sh' instruction: 'x21: 1'. The output of the 'lh' instruction is 'x5 : 5'. The terminal also shows several 'Could not read file!!!' messages for files that were not found.

Program 9

This is a program of Store Word and Load Word operation run on the Designed Interpreter:-



Program 10

This is a program of Logical Shift Left operation run on the Designed Interpreter:-

The screenshot shows a code editor with the following components:

- EXPLORER:** A file tree on the left showing the project structure. The 'Testing-File' directory is expanded, showing files like 'add.asm', 'AND.asm', 'memopb.asm', 'memopd.asm', 'memopw.asm', 'OR.asm', 'Readme.txt', 'SLL.asm', 'SLT.asm', 'SRA.asm', 'SRL.asm', 'Sub.asm', 'Test_Ex1.asm', 'Test_Ex2.asm', 'Test_Ex3.asm', and 'Test_Ex4.asm'. The 'SLL.asm' file is selected.
- EDITOR:** The main window displays the contents of 'SLL.asm'. The code is as follows:

```
1 .main:
2     addi x20, x0, 30
3     addi x21, x0, 2
4     sll x22, x20, x21
5     .print x22
6 end
```
- TERMINAL:** A terminal window at the bottom shows the execution of the program. The output is as follows:

```
x22: 500
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/and.asm;
x21: 1
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/memopb.asm;
x5 : 5
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/memopd.asm;
x5 : 5
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/memopw.asm;
x5 : 5
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/OR.asm;
x22: 5
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/SLT.asm;
x22: 120
Apples-MacBook-Air:src apple$
```

Program 11

This is a program of Set Less Than operation run on the Designed Interpreter:-

The screenshot shows a Visual Studio Code editor with the following components:

- EXPLORER:** Displays a file tree with folders like 'OPEN EDITORS', 'RISCV-EMULATOR-MAIN', and 'Testing-File'. The file 'SLT.asm' is selected.
- Editor:** Shows the content of 'SLT.asm':

```
1 .main:
2     addi x20, x0, 2
3     addi x21, x0, 5
4     slt x22, x20, x21
5     .print x22
6 end
```
- TERMINAL:** Shows the execution output:

```
x21: 1
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/me
mopb.asm;
x5 : 5
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/me
mopd.asm
x5 : 5
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/me
moph.asm
x5 : 5
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/me
mopw.asm
x5 : 5
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/OR
.asm
x22: 5
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/SL
L.asm
x22: 120
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/SL
T.asm
x22: 1
Apples-MacBook-Air:src apple$
```

Program 12

This is a program of Arithmetic Shift Right operation run on the Designed Interpreter:-

The screenshot shows a code editor with the following components:

- EXPLORER:** Displays a file tree with folders like 'OPEN EDITORS', 'RISCV-EMULATOR-MAIN', and 'Testing-File'. The file 'SRA.asm' is selected.
- Editor:** Shows the assembly code for 'SRA.asm':

```
1 .main:
2     addi x20, x0, -30
3     addi x21, x0, 2
4     sra x22, x20, x21
5     .print x22
6 end
```
- TERMINAL:** Shows the execution output:

```
x5 : 5
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/me
mopd.asm
x5 : 5
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/me
moph.asm
x5 : 5
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/me
mopw.asm
x5 : 5
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/OR
.asm
x22: 5
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/SL
L.asm
x22: 120
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/SL
T.asm
x22: 1
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/SR
A.asm
x22: -8
Apples-MacBook-Air:src apple$
```

Program 13

This is a program of Logical Shift Left operation run on the Designed Interpreter:-

The screenshot shows a Visual Studio Code editor with the following components:

- EXPLORER (Left Panel):** Displays the project structure. The 'RISCV-EMULATOR-MAIN' folder is expanded, showing subfolders 'src' and 'Testing-File'. The 'src' folder contains files like 'a.out', 'AND.asm', and various header files. The 'Testing-File' folder contains several assembly files, with 'SRL.asm' selected.
- Editor (Center):** Displays the content of 'SRL.asm'. The code is as follows:

```
1 .main:
2     addi x20, x0, -30
3     addi x21, x0, 2
4     srl x22, x20, x21
5     .print x22
6 end
```
- TERMINAL (Bottom Panel):** Shows the execution output of the program. The commands and their outputs are:

```
x5 : 5
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/me
moph.asm
x5 : 5
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/me
mopw.asm
x5 : 5
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/OR
.asm
x22: 5
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/SL
L.asm
x22: 120
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/SL
T.asm
x22: 1
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/SR
A.asm
x22: -8
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/SR
L.asm
x22: 4611686018427387896
Apples-MacBook-Air:src apple$
```

Program 14

This is a program of an Example from the Book Computer Organisation and Architecture run on the Designed Interpreter:-

The screenshot shows a code editor with the following components:

- EXPLORER:** Displays a file tree with folders like 'OPEN EDITORS', 'RISCV-EMULATOR-MAIN', and 'Testing-File'. The file 'Test_Ex2.asm' is selected.
- Editor:** Shows the assembly code for 'Test_Ex2.asm':

```
1 .main:
2 addi x5, x0, 0
3 ori x1, x5, 1
4 sub x5, x0, x1
5 .print x5
6 end
```
- TERMINAL:** Shows the execution output:

```
x22: 5
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/SL
L.asm
x22: 120
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/SL
T.asm
x22: 1
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/SR
A.asm
x22: -8
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/SR
L.asm
x22: 4611686018427387896
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/Su
b.asm
x22: 2
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/Te
st_Ex1.asm
x1 : -10
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/Te
st_Ex2.asm
x5 : -1
Apples-MacBook-Air:src apple$
```

Program 15

This is a program of an Example from the Book Computer Organisation and Architecture run on the Designed Interpreter:-

The screenshot shows a code editor with a dark theme. The Explorer panel on the left shows a project structure with folders like 'RISCV-EMULATOR-MAIN' and 'Testing-File'. The main editor window displays the assembly code for 'Test_Ex3.asm':

```
1 .main:
2 addi x5, x0, 12
3 mul x6, x5, x5
4 mul x6, x6, x5
5 addi x6, x6, 1
6 .print x6
7 end
```

Below the code editor is a terminal window showing the execution output:

```
x22: 120
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/SL
T.asm
x22: 1
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/SR
A.asm
x22: -8
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/SR
L.asm
x22: 4611686018427387896
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/Su
b.asm
x22: 2
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/Te
st_Ex1.asm
x1 : -10
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/Te
st_Ex2.asm
x5 : -1
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/Te
st_Ex3.asm
x6 : 1729
Apples-MacBook-Air:src apple$
```

Program 16

This is a program of an Example from the Book Computer Organisation and Architecture run on the Designed Interpreter:-

The screenshot shows a code editor with a dark theme. The Explorer panel on the left shows a project structure with folders like 'OPEN EDITORS', 'RISCV-EMULATOR-MAIN', and 'Testing-File'. The main editor window displays the assembly code for 'Test_Ex4.asm':

```
1 .main:
2 addi x5, x0, 64
3 srai x6, x5, 2
4 .print x6
5 end
```

Below the code editor is a terminal window showing the execution output. The output is as follows:

```
x22: 1
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/SRA.asm
x22: -8
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/SRL.asm
x22: 4611686018427387896
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/Sub.asm
x22: 2
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/Test_Ex1.asm
x1 : -10
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/Test_Ex2.asm
x5 : -1
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/Test_Ex3.asm
x6 : 1729
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/Test_Ex4.asm
x6 : 16
Apples-MacBook-Air:src apple$
```

Program 17

This is a program of an Example from the Book Computer Organisation and Architecture run on the Designed Interpreter:-

The screenshot shows a code editor with a dark theme. The Explorer panel on the left shows a project structure with folders like 'OPEN EDITORS', 'RISCV-EMULATOR-MAIN', and 'Testing-File'. The main editor window displays the assembly code for 'Test_Ex5.asm':

```
1 .main:
2   addi x5, x0, 25
3   slli x5, x5, 2
4   addi x6, x0, 10
5   add x6, x5, x6
6   .print x6
7   end
```

Below the code editor is a terminal window showing the execution output:

```
x22: -8
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/SRL.asm
x22: 4611686018427387896
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/Sub.asm
x22: 2
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/Test_Ex1.asm
x1 : -10
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/Test_Ex2.asm
x5 : -1
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/Test_Ex3.asm
x6 : 1729
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/Test_Ex4.asm
x6 : 16
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/Test_Ex5.asm
x6 : 110
Apples-MacBook-Air:src apple$
```

Program 18

This is a program of an Example from the Book Computer Organisation and Architecture run on the Designed Interpreter:-

The screenshot shows a code editor with a dark theme. The Explorer panel on the left lists files under 'OPEN EDITORS' and 'RISCV-EMULATOR-MAIN'. The main editor window displays the assembly code for 'Test_Ex6.asm':

```
1 .main:
2 addi x7, x0, 5
3 addi x5, x0, 1
4 addi x6, x0, 1
5 loop:
6 mul x5, x6, x5
7 addi x6, x6, 1
8 bge x7, x6, loop
9 .print x5
10 end
```

Below the code, the TERMINAL panel shows the execution output:

```
x22: 4611686018427387896
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/Su
b.asm
x22: 2
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/Te
st_Ex1.asm
x1 : -10
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/Te
st_Ex2.asm
x5 : -1
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/Te
st_Ex3.asm
x6 : 1729
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/Te
st_Ex4.asm
x6 : 16
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/Te
st_Ex5.asm
x6 : 110
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/Te
st_Ex6.asm
x5 : 120
Apples-MacBook-Air:src apple$
```

The status bar at the bottom indicates 'Ln 1, Col 1', 'Spaces: 4', 'UTF-8', 'CRLF', 'Plain Text', and 'Go Live'.

Program 19

This is a program of an Example from the Book Computer Organisation and Architecture run on the Designed Interpreter:-

The screenshot shows a code editor with a dark theme. The Explorer panel on the left shows a project structure with folders like 'OPEN EDITORS', 'RISCV-EMULATOR-MAIN', and 'Testing-File'. The main editor window displays the assembly file 'Test_Ex8.asm' with the following code:

```
1 .foo:
2     addi x5, x0, 2
3     jalr x0, 0(x1)
4 .main:
5     addi x6, x0, 3
6     jal x1, .foo
7     add x7, x5, x6
8     .print x7
9 end
```

Below the code editor is a terminal window showing the execution output. The output includes register values and a message indicating an invalid instruction at line 10.

```
x1 : -10
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/Te
st_Ex2.asm
x5 : -1
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/Te
st_Ex3.asm
x6 : 1729
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/Te
st_Ex4.asm
x6 : 16
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/Te
st_Ex5.asm
x6 : 110
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/Te
st_Ex6.asm
x5 : 120
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/Te
st_Ex7.asm
The instruction in line number 10 is INVALID.
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/Te
st_Ex8.asm
x7 : 5
Apples-MacBook-Air:src apple$
```

Program 20

This is a program of an Example from the Book Computer Organisation and Architecture run on the Designed Interpreter:-

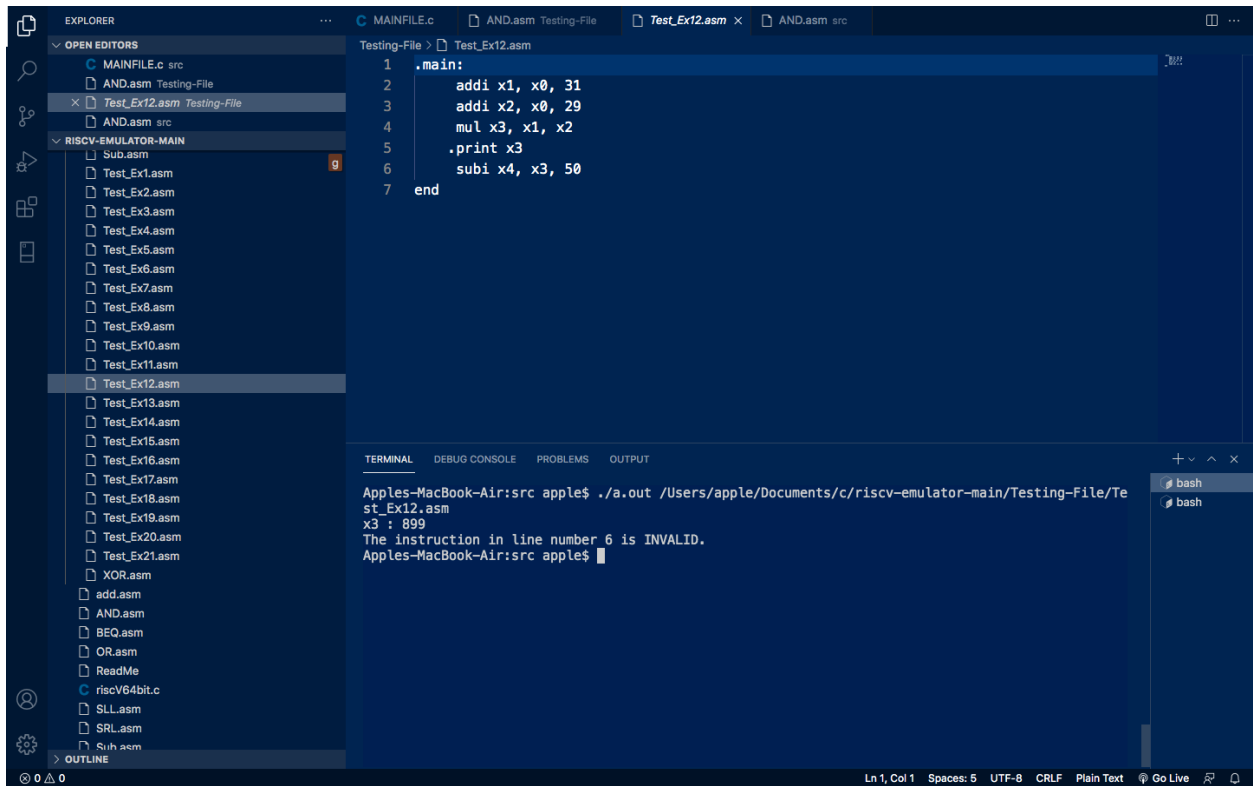
The screenshot shows a code editor with a dark theme. The Explorer panel on the left shows a project structure with folders like 'OPEN EDITORS', 'RISCV-EMULATOR-MAIN', and 'Testing-File'. The main editor window displays assembly code for 'Test_Ex9.asm'. The code includes a main function with instructions like 'addi', 'andi', 'bne', 'addi', 'srli', 'bge', and '.print'. The terminal at the bottom shows the execution of the program, displaying memory addresses and values for registers x6 and x5. An error message is visible in the terminal: 'The instruction in line number 10 is INVALID.'

```
1 .main:
2 addi x5, x0, 31
3 addi x9, x0, 64
4 addi x10, x0, 1
5 addi x6, x0, 1
6 addi x7, x0, 0
7 .loop:
8 andi x8, x5, 1
9 bne x8, x10, .increment
10 addi x7, x7, 1
11 .increment:
12 srli x5, x5, 1
13 addi x6, x6, 1
14 bge x9, x6, .loop
15 .print x7
16 end
```

```
st_Ex3.asm
x6 : 1729
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/Te
st_Ex4.asm
x6 : 16
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/Te
st_Ex5.asm
x6 : 110
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/Te
st_Ex6.asm
x5 : 120
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/Te
st_Ex7.asm
The instruction in line number 10 is INVALID.
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/Te
st_Ex8.asm
x7 : 5
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/Te
st_Ex9.asm
x7 : 5
Apples-MacBook-Air:src apple$
```

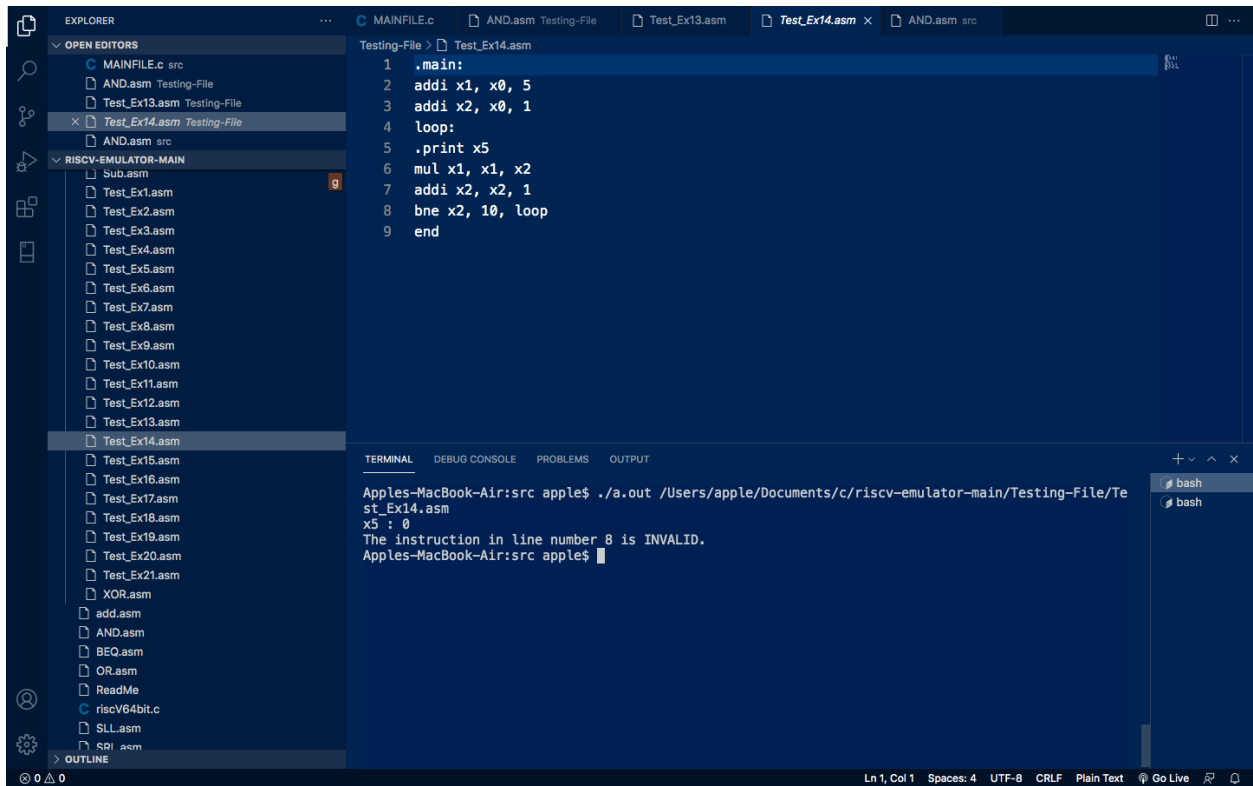
Program 21

This is a program of an Example from the Book Computer Organisation and Architecture run on the Designed Interpreter:-



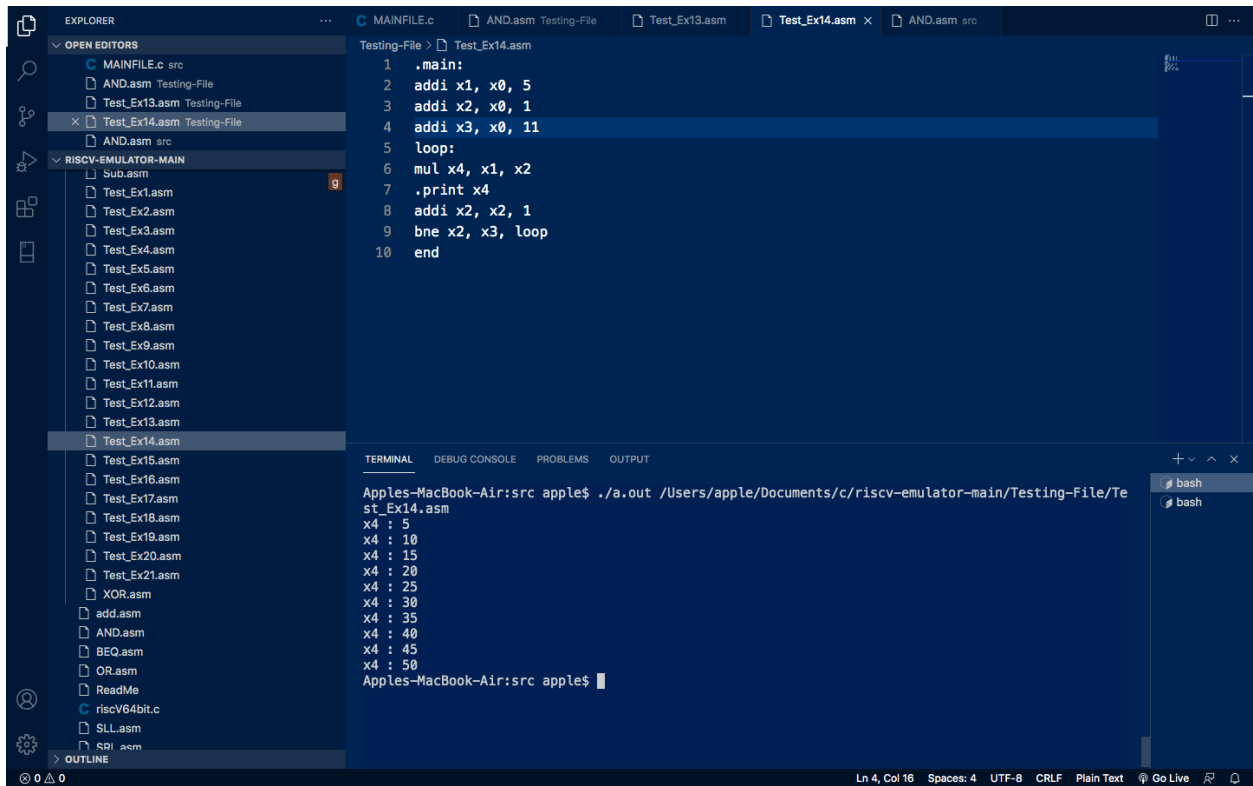
Program 22

This is a program of an Example from the Book Computer Organisation and Architecture run on the Designed Interpreter:-



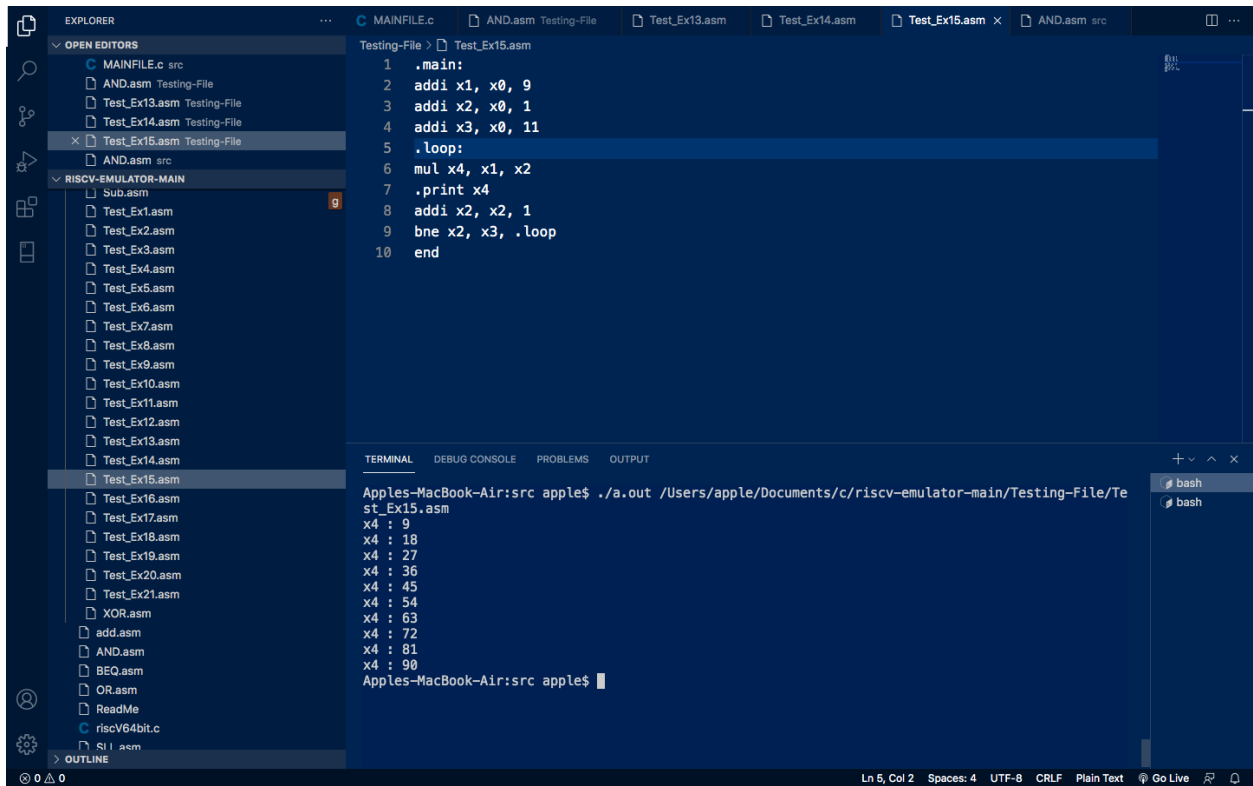
Program 23

This is a program to print multiples of '5' run on the Designed Interpreter:-



Program 24

This is a program to print multiple of '9' run on the Designed Interpreter:-



Program 25

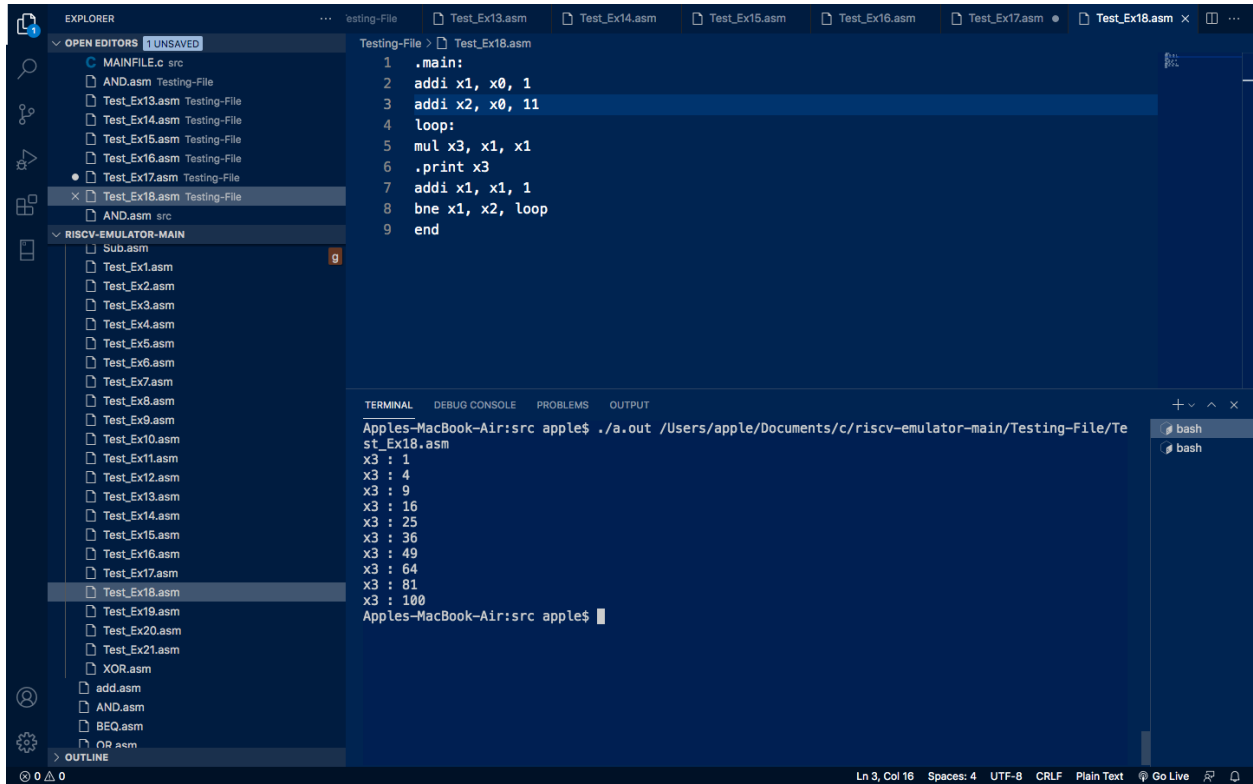
This is a program to print numbers from 2 to 20 run on the Designed Interpreter:-


```
1  .main:
2  addi x1, x0, 1
3  addi x2, x0, 1
4  addi x4, x0, 20
5  loop:
6  add x3, x1, x2
7  .print x3
8  addi x2, x2, 1
9  bne x2, x4, loop
10 end
```

```
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/Te
st_Ex16.asm
x3 : 2
x3 : 3
x3 : 4
x3 : 5
x3 : 6
x3 : 7
x3 : 8
x3 : 9
x3 : 10
x3 : 11
x3 : 12
x3 : 13
x3 : 14
x3 : 15
x3 : 16
x3 : 17
x3 : 18
x3 : 19
x3 : 20
Apples-MacBook-Air:src apple$
```

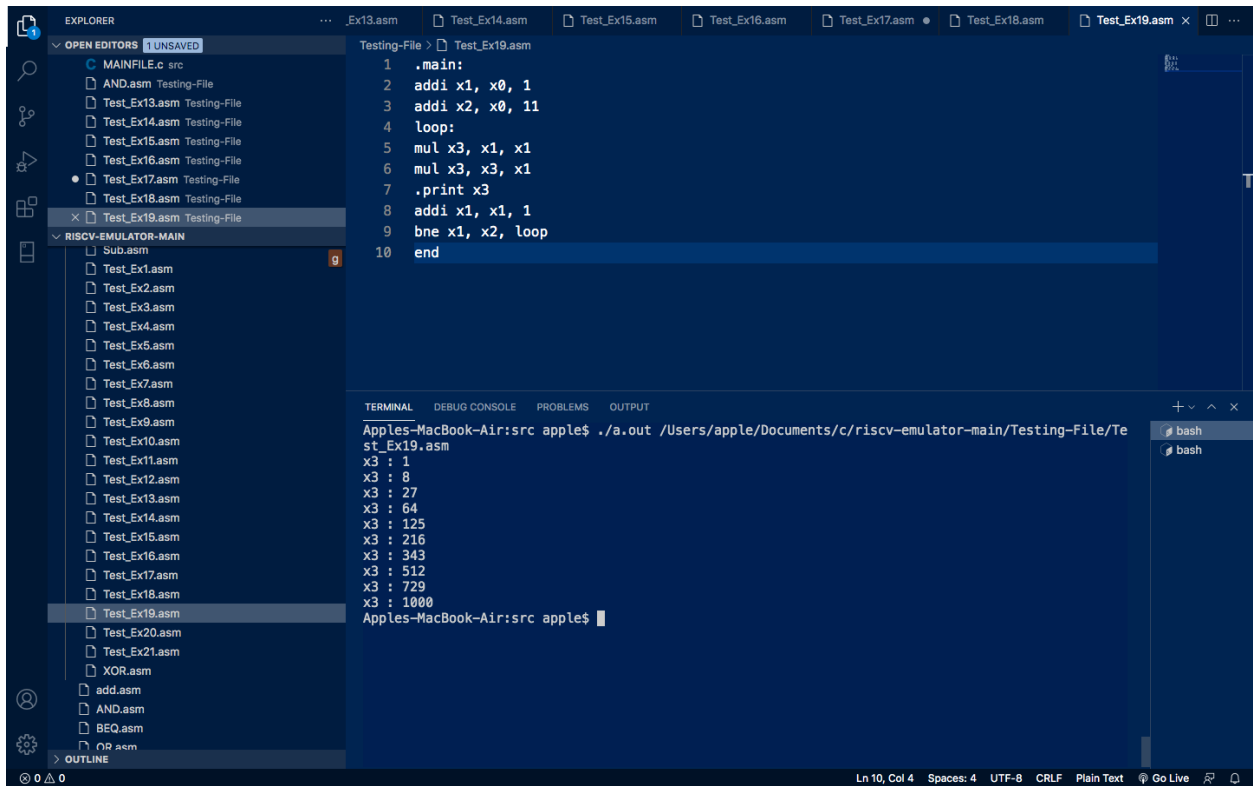
Program 26

This is a program to print squares of numbers from 1 to 10 run on the Designed Interpreter:-



Program 27

This is a program to print Cubes of numbers from 1 to 10 run on the Designed Interpreter:-



```
1  .main:
2  addi x1, x0, 1
3  addi x2, x0, 11
4  loop:
5  mul x3, x1, x1
6  mul x3, x3, x1
7  .print x3
8  addi x1, x1, 1
9  bne x1, x2, loop
10 end
```

```
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/Te
st_Ex19.asm
x3 : 1
x3 : 8
x3 : 27
x3 : 64
x3 : 125
x3 : 216
x3 : 343
x3 : 512
x3 : 729
x3 : 1000
Apples-MacBook-Air:src apple$
```

Program 28

This is a program to Swap two numbers run on the Designed Interpreter:-

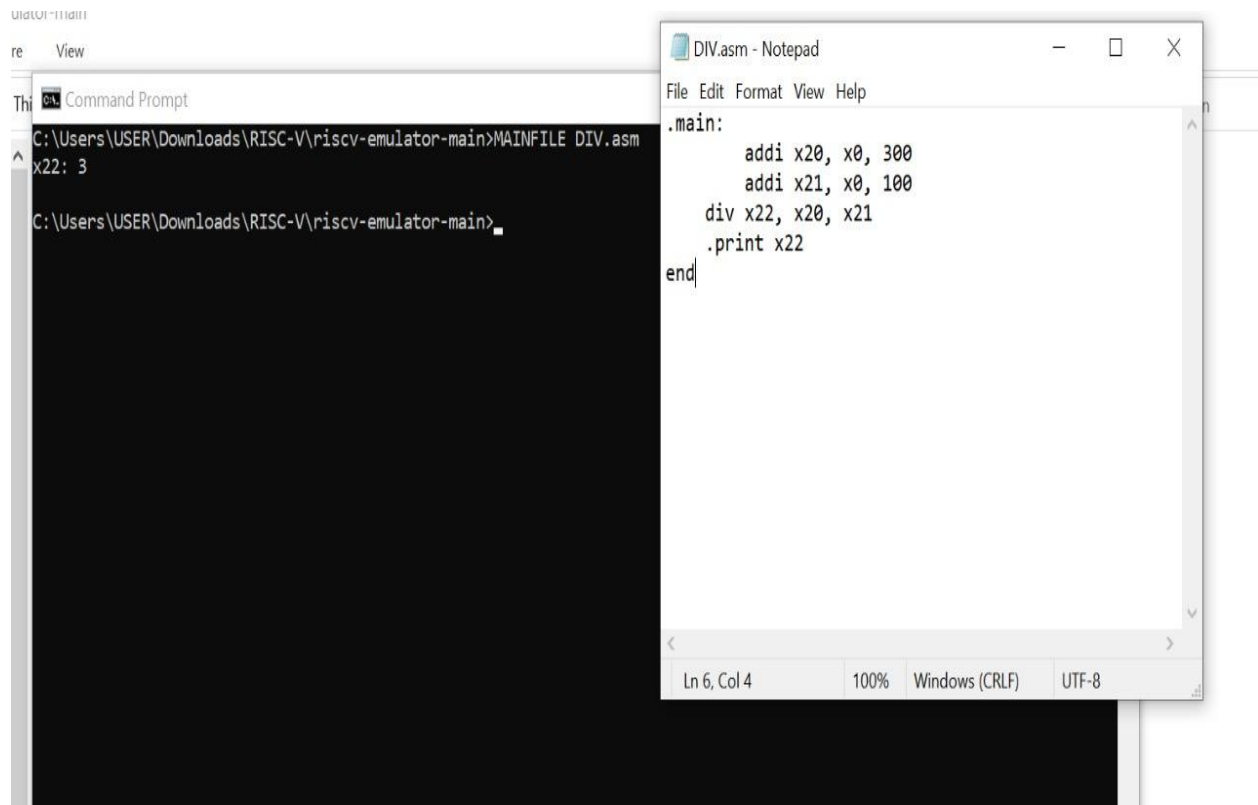
The screenshot shows a code editor with a file explorer on the left and a terminal at the bottom. The file explorer lists several assembly files under 'OPEN EDITORS' and 'RISCV-EMULATOR-MAIN'. The main editor window displays the assembly code for 'Test_Ex20.asm'. The code performs a division of 7 by 5, storing the quotient in x1 and the remainder in x2. The terminal shows the execution of the program, which outputs 'x1 : 5' and 'x2 : 7'.

```
1 .main:
2 addi x1, x0, 7
3 addi x2, x0, 5
4 add x3, x0, x1
5 add x1, x0, x2
6 add x2, x1, x3
7 sub x2, x2, x1
8 .print x1
9 .print x2
10 end
```

```
Apples-MacBook-Air:src apple$ ./a.out /Users/apple/Documents/c/riscv-emulator-main/Testing-File/Te
st_Ex20.asm
x1 : 5
x2 : 7
Apples-MacBook-Air:src apple$
```

Program 29

This is a program to Division of two numbers run on the Designed Interpreter:-



The image shows two overlapping windows. The background window is a RISC-V emulator titled "riscv-emulator-main". It has a menu bar with "File" and "View". The main area is a black terminal window with white text. The text shows the command prompt "C:\Users\USER\Downloads\RISC-V\riscv-emulator-main>MAINFILE DIV.asm" and the output "x22: 3". The foreground window is a Notepad window titled "DIV.asm - Notepad". It has a menu bar with "File", "Edit", "Format", "View", and "Help". The text area contains assembly code: ".main:", "addi x20, x0, 300", "addi x21, x0, 100", "div x22, x20, x21", ".print x22", and "end". The status bar at the bottom of the Notepad window shows "Ln 6, Col 4", "100%", "Windows (CRLF)", and "UTF-8".

```
re View
Thi Command Prompt
C:\Users\USER\Downloads\RISC-V\riscv-emulator-main>MAINFILE DIV.asm
x22: 3
C:\Users\USER\Downloads\RISC-V\riscv-emulator-main>

DIV.asm - Notepad
File Edit Format View Help
.main:
    addi x20, x0, 300
    addi x21, x0, 100
    div x22, x20, x21
    .print x22
end
Ln 6, Col 4 100% Windows (CRLF) UTF-8
```

Program 30

This is a program of Multiplication of two numbers run on the Designed Interpreter:-

```
View
Command Prompt
Microsoft Windows [Version 10.0.19041.928]
(c) Microsoft Corporation. All rights reserved.

C:\Users\USER>cd C:\Users\USER\Downloads\RISC-V\riscv-emulator-main

C:\Users\USER\Downloads\RISC-V\riscv-emulator-main>MAINFILE MUL.asm
x22: 2000

C:\Users\USER\Downloads\RISC-V\riscv-emulator-main>

MULasm - Notepad
File Edit Format View Help
.main:
    addi x20, x0, 40
    addi x21, x0, 50
    mul x22, x20, x21
    .print x22
end
Ln 6, Col 4    100%    Windows (CRLF)    UTF-8
```

Program 31

This is a program to find remainder of two numbers run on the Designed Interpreter:-

```
Command Prompt
Could not read file!!!

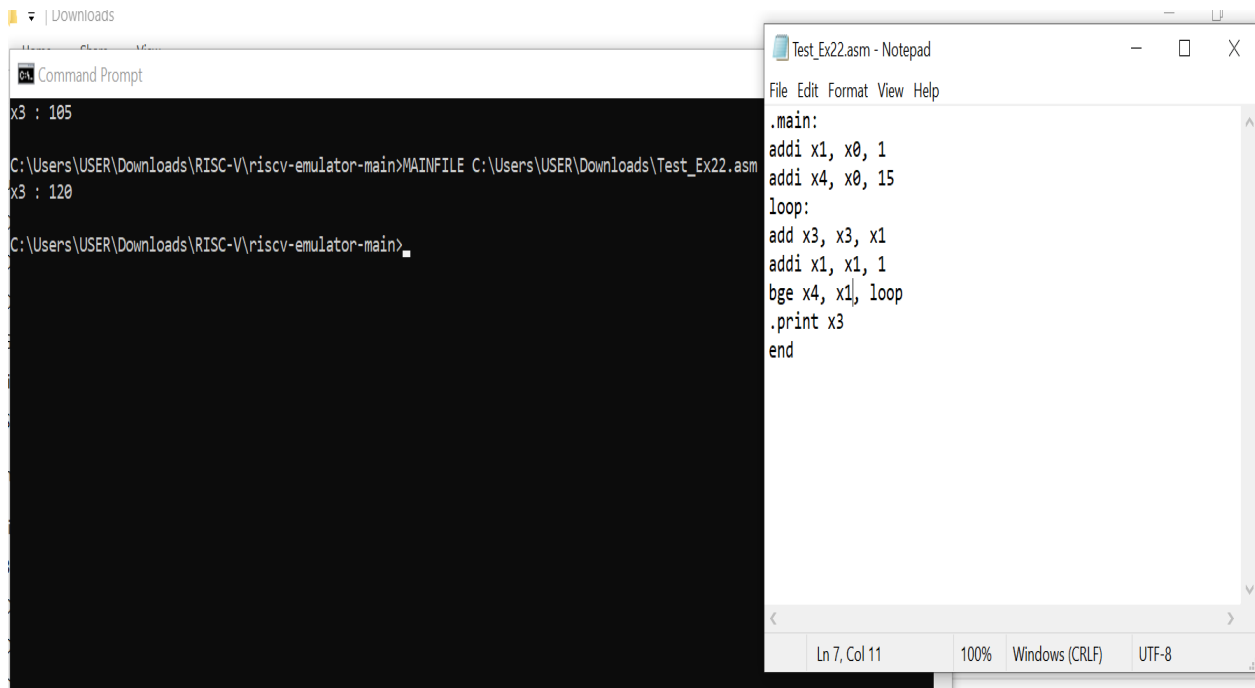
C:\Users\USER\Downloads\RISC-V\riscv-emulator-main>MAINFILE C:\Users\USER\Downloads\REM.asm
x22: 8

C:\Users\USER\Downloads\RISC-V\riscv-emulator-main>

REM.asm - Notepad
File Edit Format View Help
.main:
    addi x20, x0, 25
    addi x21, x0, 17
    rem x22, x20, x21
    .print x22
end
Ln 6, Col 4    100%    Windows (CRLF)    UTF-8
```

Program 32

This is a program to find sum of first 'n' natural numbers run on the Designed Interpreter:-



The screenshot shows two windows. On the left is a 'Command Prompt' window with a black background, displaying the output of a RISC-V emulator. It shows register x3 with values 105 and 120. On the right is a 'Notepad' window titled 'Test_Ex22.asm - Notepad', showing the assembly code for the program.

```
Command Prompt
x3 : 105
C:\Users\USER\Downloads\RISC-V\riscv-emulator-main>MAINFILE C:\Users\USER\Downloads\Test_Ex22.asm
x3 : 120
C:\Users\USER\Downloads\RISC-V\riscv-emulator-main>
```

```
Test_Ex22.asm - Notepad
File Edit Format View Help

.main:
addi x1, x0, 1
addi x4, x0, 15
loop:
add x3, x3, x1
addi x1, x1, 1
bge x4, x1, loop
.print x3
end
```

Ln 7, Col 11 100% Windows (CRLF) UTF-8

Program 33

This is a program to load 32-bit immediate run on the Designed Interpreter:-

The screenshot shows a RISC-V emulator window on the left and a Notepad window on the right. The emulator window has a title bar that says "Command Prompt" and shows the following commands and output:

```
C:\Users\USER\Downloads\RISC-V\riscv-emulator-main>MAINFILE DIV.asm
x22: 3

C:\Users\USER\Downloads\RISC-V\riscv-emulator-main>MAINFILE lui.asm
x22: 819700

C:\Users\USER\Downloads\RISC-V\riscv-emulator-main>
```

The Notepad window has a title bar that says "Odd.asm - Notepad" and shows the following assembly code:

```
.main:
    lui x20, 100
    addi x20, x20, 300
    lui x21, 100
    addi x21, x21, 200
    add x22, x20, x21
    .print x22
end
```

The status bar at the bottom of the Notepad window shows "Ln 8, Col 4", "100%", "Windows (CRLF)", and "UTF-8".

Program 34

This is a program to find odd or even number 1 for odd and 0 for even run on the Designed Interpreter:-

The screenshot shows a RISC-V emulator window on the left and a Notepad window on the right. The emulator window has a title bar that says "Command Prompt" and shows the following commands and output:

```
C:\Users\USER\Downloads\RISC-V\riscv-emulator-main>MAINFILE C:\Users\USER\Downloads\Odd.asm
x22: 1

C:\Users\USER\Downloads\RISC-V\riscv-emulator-main>
```

The Notepad window has a title bar that says "Odd.asm - Notepad" and shows the following assembly code:

```
.main:
    addi x20, x0, 301
    addi x21, x0, 2
    rem x22, x20, x21
    .print x22
end
```

The status bar at the bottom of the Notepad window shows "Ln 6, Col 4", "100%", "Windows (CRLF)", and "UTF-8".