

E85: Digital Design and Computer Engineering

Problem Set 8

1) Writing a Function in Assembly Language

The high-level function `strcpy` copies the character string `src` to the character string `dst`.

```
// C Code
void strcpy(char dst[], char src[]){
    int i = 0;
    do {
        dst[i] = src[i];
    } while (src[i++]);
}
```

Implement the `strcpy` function in RISC-V assembly code. Assume the base address of `dst` is stored in `s0` and the base address of `src` is stored in `s1`. Use `s2` for `i`.

2) Assembly Language to Machine Language

Translate the following assembly language code to RISC-V machine language:

```
loop:
    beq s0, s1, done
    addi t0, t0, 1
    j loop
done:
```

3) Machine Language to Assembly Language

Translate the following machine language code to RISC-V assembly language:

```
0x08042283
0x02A2E313
```

4) Impact on Society: Research and write a paragraph biography about a person who contributed to the development of digital technology. What made her/his achievements notable at the time? In what ways did the person's work lead to positive or negative societal change?

How long did you spend on this problem set? This will not count toward your grade but will help calibrate the workload.