Computer Organization Lab-4

Members

Aiswarya H, 111901006

Joel Sam Mathew, 111901026

Reports

1. even-odd.asm

```
    .data
a:
    10
    .text
main:
    load %x0, $a, %x3
    divi %x3, 2, %x4
    muli %x4, 2, %x5
    beq %x3, %x5, even
    bne %x3, %x5, odd
even:
    subi %x0, 1, %x10
    end
odd:
    addi %x0, 1, %x10
    end
```

even-odd_stat.txt

```
Number of instructions executed = 7
Number of cycles taken = 35
```

2. Fibonacci.asm

```
    .data
n:
    10
    .text
main:
    load %x0, $n, %x3
    add %x0, %x0, %x4
    addi %x0, 1, %x5
    addi %x0, 0, %x6
    addi %x0, 65535, %x9
    store %x6, 0, %x9
    subi %x9, 1, %x9
    add %x0, %x5, %x6
    store %x6, 0, %x9
    addi %x0, 2, %x11
loop:
    add %x4, %x5, %x6
    add %x0, %x5, %x4
    add %x0, %x6, %x5
    subi %x9, 1, %x9
    store %x6, 0, %x9
    addi %x11, 1, %x11
    beq %x11, %x3, endl
    jmp loop
endl:
    end
```

Fibonacci_stat.txt

```
Number of instructions executed = 74
Number of cycles taken = 370
```

3. palindrome.asm

```
    .data
a:
    12321
    .text
main:
    load %x0, $a, %x3
    load %x0, $a, %x5
    add %x0, %x0, %x9
    addi %x0, 1, %x4
loop:
    blt %x5, %x4, endl
    divi %x5, 10, %x6
    muli %x6, 10, %x7
    sub %x5, %x7, %x8
    muli %x9, 10, %x9
    add %x9, %x8, %x9
    divi %x5, 10, %x5
    jmp loop
endl:
    beq %x9, %x3, success
    bne %x9, %x3, fail
success:
    addi %x0, 1, %x10
    end
fail:
    subi %x0, 1, %x10
    end
```

palindrome_stat.txt

```
Number of instructions executed = 48
Number of cycles taken = 240
```

4. prime.asm

```
    .data
a:
    17
    .text
main:
    load %x0, $a, %x3
    addi %x0, 2, %x6
loop:
    div %x3, %x6, %x5
    mul %x5, %x6, %x7
    beq %x3, %x7, fail
    addi %x6, 1, %x6
    beq %x6, %x3, endl
    jmp loop
fail:
    subi %x0, 1, %x10
    end
endl:
    addi %x0, 1, %x10
    end
```

prime_stat.txt

```
Number of instructions executed = 93
Number of cycles taken = 465
```

5. descending.asm

```
    .data
a:
    70
    80
    40
    20
    10
    30
    50
    60
n:
    8
    .text
main:
    load %x0, $a, %x3
    subi %x0, 1, %x10
    load %x0, $n, %x4
loopi:
    addi %x10, 1, %x10
    subi %x0, 1, %x11
    beq %x10, %x4, finish
loopj:
    addi %x11, 1, %x11
    sub %x4, %x10, %x9
    subi %x9, 1, %x13
    addi %x11, 1, %x12
    beq %x11, %x13, endl
    load %x11, $a, %x5
    load %x12, $a, %x6
    blt %x5, %x6, swap
    jmp loopj
endl:
    jmp loopi
swap:
    store %x6, $a, %x11
    store %x5, $a, %x12
    jmp loopj
finish:
    end

```

descending_stat.txt

```
Number of instructions executed = 355
Number of cycles taken = 1775
```