

ECE3390 Prime Number Assignment

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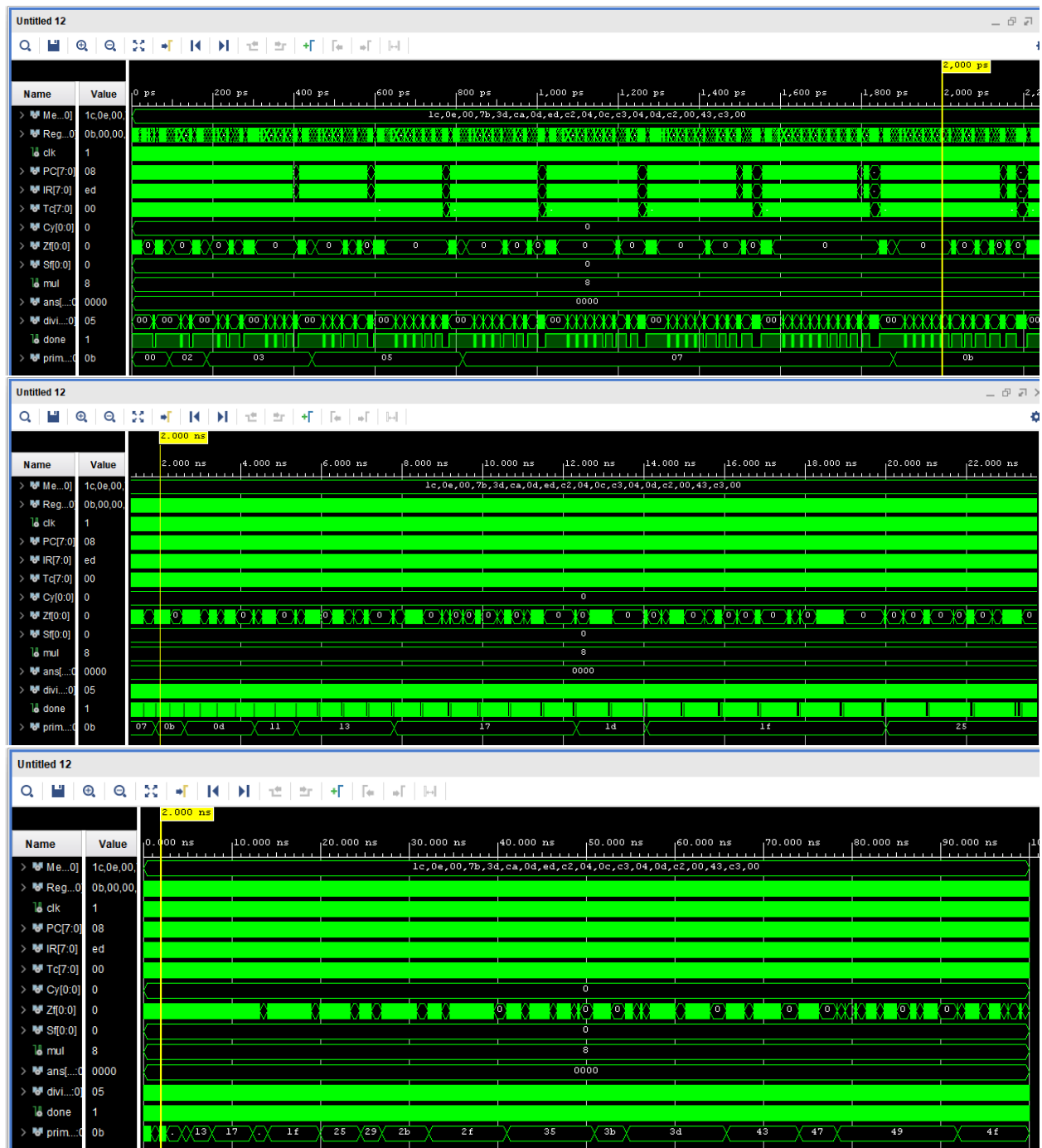
The modified C program

```
int i,j,c;
main() {
start:
    i++, c=0, j=i;
loop:
    j--;      //divisors are from i-1 to 1 instead of i to 2
    if( j == 0 ) goto next;
    if( i%j != 0 ) goto loop;
    c++;
    goto loop;
next:
    c--
    if( c != 0 ) goto start;
    printf("%d \n",i);
    goto start;
}
```

The machine Instructions

```
signal Mem:myArray:=(
    -- START, 0x
    "00011100",          -- i++                INR E
    "00001110", "00000000", -- c=0            MVI C,0x
    "01111011",          -- j=i                MOV A,E
    -- LOOP, 4x
    "00111101",          -- j--                DCR A
    "11001010", "00001101", -- if Zf=1 goto next  JZ Dx
    "11101101",          -- i%j                DIV
    "11000010", "00000100", -- if Zf=0 goto loop  JNZ 4x
    "00001100",          -- c++                INR C
    "11000011", "00000100", -- goto loop        JMP 4x
    -- NEXT, Dx
    "00001101",          -- c--                DCR C
    "11000010", "00000000", -- if Zf=0 goto start  JNZ 0x
    "01000011",          -- print            MOV B,E
    "11000011", "00000000" -- goto start        JMP 0x
);
```

The waveforms



and etc.