1. Write MIPS code for the following expressions. Assume the following register allocation:

\[ m = 12, \ n = 5, \text{ and } p = 9. \]

- \[ m = \neg n + 1; \]

- \[ m = \neg (n \& p) | (m \& n); \]

- \[ n = m^{\wedge}p; \]
2. Write MIPS code for the following blocks of C code. Assume the following register allocation.

\( x = 7 \), \( y = 15 \), and \( z = 23 \).

- \( x = y + 1; \)
  \( y = x \mid z; \)
  \( z = x \& y; \)

- \( x = z - y; \)
  \( z = y \uparrow 10; \)
  \( y = \neg(x \mid z); \)
3. Modify the datapath drawn below to add support for immediate instructions. Thereafter write the value of all inputs in the following circuit diagram for each instruction below.

- \textbf{addi} $7, 6, 5$

- \textbf{ori} $5, 0, 10$

- \textbf{subi} $5, 3, 2$