Worksheet: The Fetch-Execute Cycle

The Fetch-Execute Cycle is the process by which the CPU runs instructions. This worksheet will help you understand each stage of the cycle and the roles of different components.

# Activity 1: Fill in the Gaps

Complete the sentences below using the following terms: Program Counter, Memory Address Register, Memory Data Register, Control Unit, ALU, Accumulator.

1. The \_\_\_\_\_\_\_\_\_\_ holds the address of the next instruction to be fetched.

2. This address is copied to the \_\_\_\_\_\_\_\_\_\_.

3. The instruction at the address is fetched into the \_\_\_\_\_\_\_\_\_\_.

4. The \_\_\_\_\_\_\_\_\_\_ decodes the instruction and determines the operation to perform.

5. If it’s a calculation, the \_\_\_\_\_\_\_\_\_\_ performs the operation.

6. The result is stored in the \_\_\_\_\_\_\_\_\_\_.

# Activity 2: Instruction Sorting

Below is a list of CPU actions. Number them in the correct order to represent the Fetch-Execute Cycle.

\_\_\_ The instruction at the address is fetched into the MDR.

\_\_\_ The PC tells the CPU where to fetch from.

\_\_\_ The ALU performs the calculation (if needed).

\_\_\_ The CU decodes the instruction.

\_\_\_ The result is stored in the Accumulator.

\_\_\_ The address is copied to the MAR.

# Activity 3: Short Answer Questions

1. What is the purpose of the Program Counter (PC)?

2. What does the Control Unit do during the decode stage?

3. How is the ALU involved in the execute stage?

4. What is the difference between the MAR and the MDR?