Type of Operations

- Roughly grouped into **four categories**:
  
  - **Data transfer**: transfer data from one location to another
    - Load, Store, Move (transfer), Push, Pop, …
  
  - **Arithmetic/logic** operations: perform function in ALU
    - Add, Subtract, Multiply, Divide, …
    - AND, OR, NOT, XOR, Shift, Rotate, …
  
  - **System control**: instructions reserved for the use of the operation system
  
  - **Transfer of control**: update program counter
    - **Branch instruction**: BRA, BRZ, …
  
  - **Function (procedure) call instructions**
    - Function perhaps is the most fundamental language feature for abstraction and code reuse.
    - Two basic instructions:
      - a **call** instruction: *branches from the present location to the procedure*
      - a **return** instruction: *returns from the procedure to the place from which it was called*