Data type of operands and assembler instructions

- **Does assembler programming use *data types* ???**
  - **Notice that:**

    - A **register** or **memory cell** contains a **bit pattern**

    - There is **no** information about the **data type** (= **encoding scheme**) used !!!

  - **How** is the **data type** "used" in **assembler programming**:

    - The **computer (CPU)** has ***different*** **instructions** that **operate** using ***different*** **encoding methods** !!!

    Example:

    - `mulu`: perform a **multiplication operation** **assuming** that the the **representation** used is for **unsigned numbers**

      Example:

      ```
              11111111 11111110    =  65534(10)  (unsigned)
              00000000 00000010    =      2(10)  (unsigned)
      ------------------------------------------------
      000.0011111111 111111100    = 131068 <--- result of an unsigned multiplication
      ```

    - `muls`: perform a **multiplication operation** **assuming** that the the **representation** used is for ***signed* numbers** (= 2's complement encoding)

      Example:

      ```
              11111111 11111110    =  -2(10)  (2's complement)
              00000000 00000010    =   2(10)  (2's complement)
      ------------------------------------------------
      111..111111111 111111100    =  -4(10)  <--- result of an signed multiplication
      ```

    Demo: **data-type.s** in the **demo** directory.