1. What **memory areas** do the following **Java Virtual Machine** registers point to?

   a) SP

   b) LV

   c) CPP

2. **What other data area** is the stack used for aside from holding operands for instructions?

3. The **stack pointer** contains the decimal value "**2045**". **What will it contain** after three numbers are pushed onto the stack?

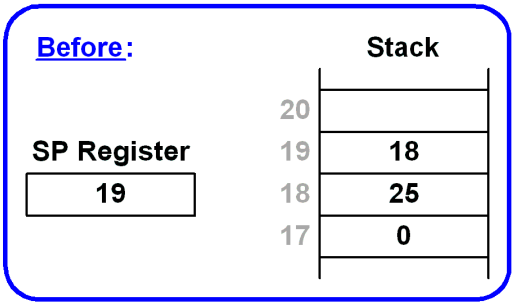
4. **What register** is changed as a result of the **GOTO** instruction?

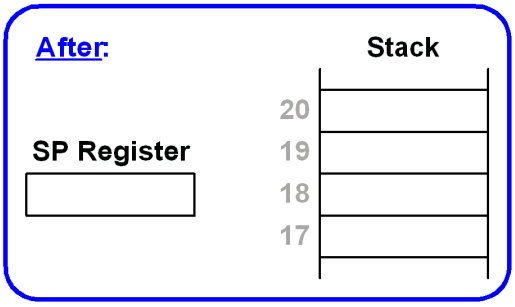
5. **What** gets saved on the stack as the result of a **subroutine call instruction**?

6. What's the **difference** between a "**BIPUSH 12**" and a "**ILOAD 12**" instruction?

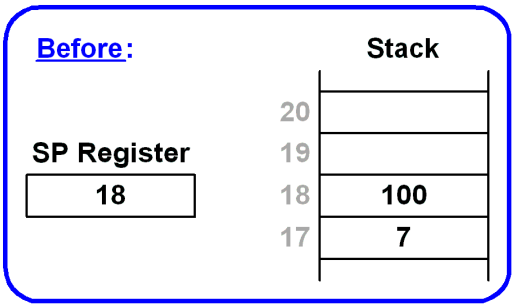
7. **Show the new register and stack contents** after the following instructions are executed:

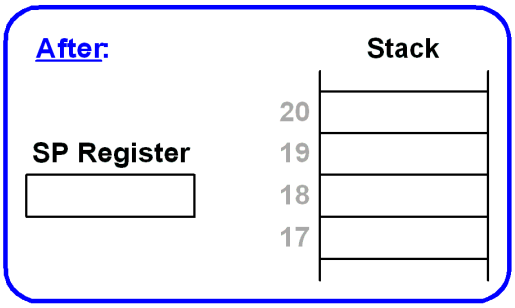
SUB



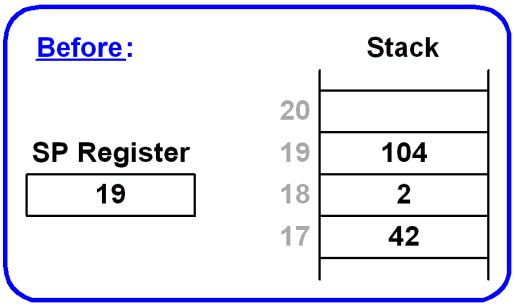


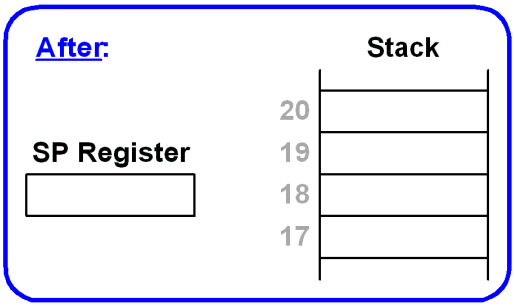
BIPUSH 20





ISTORE 18





8. **List** the major components of the MIC-1's **data path**.

9. **Give the names** of MIC-1 registers that are used for the following functions:

   a) Holds a **copy** of the **word most recently pushed onto the stack**

   b) Holds the **memory address** of the **data area being read or written**.

   c) Holds the **memory address** of the **next instruction to be fetched**.

   d) Holds the **memory address** of the **word most recently pushed onto the stack**.

   e) Holds the **data read** from memory or about to be **written** to memory.

10. **Can** the MIC-1 add the **LV** and **MDR** registers together in the same clock cycle? Why or why not?

11. **Why** does the MBR register have **two** different control signals to load it's data onto the B Bus?