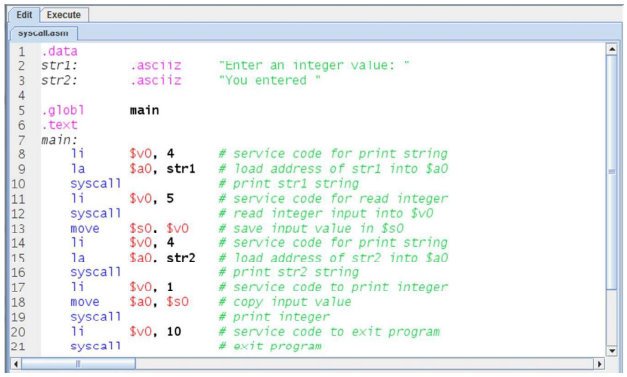

Figure 2.4: MIPS Program that uses System Calls

2.6 Exercise

1. Modify the program shown in Figure 2.4. Ask the user to enter an integer value, and then print the result of doubling that number. Use the `add` instruction.
2. Modify again the program shown in Figure 2.4. Ask the user whether he wants to repeat the program: `"\nRepeat [y/n]? "`. Use service code 12 to read a character and the branch instruction to repeat the main function if the user input is character `'y'`.
3. Write a MIPS program that asks the user to input his name and then prints `"Hello "`, followed by the name entered by the user.
4. Write a MIPS program that executes the statement: $s = (a + b) - (c + 101)$, where a, b, and c are user provided integer inputs, and s is computed and printed as an output. Answer the following:
   a. Suppose the user enters $a = 5$, $b = 10$, and $c = -30$, what is the expected value of s?
   b. Which instruction in your program computed the value of s and which register is used?
   c. What is the address of this instruction in memory?
   d. Put a breakpoint at this instruction and write the value of the register used for computing s in decimal and hexadecimal.
5. Write a MIPS program that inputs two integer values. The program should output `equal` if the two integers are equal. Otherwise, it should output `not equal`. Use the branch instruction to check for equality.