

2022 Spring CmpE 230 HW2

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First, a variable “**temp**” is initialized with value 0.

The input is read character by character with the appropriate interrupt command and the character is stored in **BL**.

We check if the character is an **operator** (+, *, /, ^, &, |), a **whitespace**, **enter**, or a **digit** of a number.

- If it is an **operator**, we jump to the corresponding operation part of the code. In these parts, two operands are popped from the stack and the operation is done. The result of that operation is kept in **AX** and then moved to **temp**.
- If the character is a **whitespace**, that means the number is completely read, or an operation is done. Either way, we push the current value, that is kept by **temp**, to the stack by jumping to **push_to_stack**.
- If the character is **enter**, the input is complete and the result can be printed, hence we jump to **print_result**.
- Else, the character is a **digit** of a number. We first multiply the current read number (in **temp**) by 10h. The character can be between 0-9 or A-F.
 - If it is between **0-9**, we jump to **process_number**, where the ASCII value of the number is converted into the hexadecimal value of the number by subtracting **30h** from it.
 - If it is between **A-F**, we jump to **process_letter**, where the ASCII value of the number is converted into the hexadecimal value of the number by subtracting **37h** from it.
 - We determine this by comparing the char being read with the char '@' (some random character in the ASCII table that is between '9' and 'A').

Then we add the value of the char to **temp**.

print_result:

We initialize an array of 4 and add “\$” at the end. The digits are converted into their ASCII values. If the digit is greater than 9, then we add **30h**, else we add **37h**. We add the current ASCII values from the end of the array to the front of it.

The result must be printed in 4 digits, so if leading zeros are needed, we add them.

Finally, the result string is printed with the appropriate interrupt command.