

## 21.- ft\_atoi.-

Function based on the definition given in the BSD man pages for “atoi(3)”.  
The library associated is <stdlib.h> (standard C library).

**Synopsis:** `int atoi(const char *str);`

**Purpose:**

Converts a string representation of an integer (`str`) into its corresponding integer value.

**Parameters:**

- `str`: The string containing the integer to convert.

**Return Value:**

Returns the converted integer value.

**Description:**

- Parses the string, starting from the beginning, to extract the integer digits.
- Handles optional leading whitespace, sign characters (+ or -), and only considers valid digits (0-9).
- Converts the extracted digits into an integer value.

**Code:**

```
#include "libft.h"

int ft_atoi(const char *str)
{
    int sign = 1;
    int num = 0;

    // Skip leading whitespace
    while (str[0] == ' ' || (str[0] >= 9 && str[0] <= 13))
        str++;

    // Handle sign
    if (str[0] == '+')
        str++;
    else if (str[0] == '-')
    {
        sign = -1;
        str++;
    }

    // Extract digits and convert to integer
    while (str[0] != '\0' && str[0] >= '0' && str[0] <= '9')
    {
        num = num * 10 + str[0] - '0';
        str++;
    }

    return (num * sign);
}
```

**Code Explanation**

**1. Initializes variables:**

- **sign:** Stores the sign of the integer (1 for positive, -1 for negative).
- **num:** Stores the accumulated integer value.

**2. Skips leading whitespace:** Iterates until a non-whitespace character is found.

**3. Handles sign:** Checks for '+' or '-' and adjusts **sign** accordingly.

**4. Extracts digits:**

- Iterates through the string as long as valid digits are found.
- Converts each digit from a character to its numerical value and adds it to **num** using multiplication and subtraction.

**5. Returns integer:** Returns the final **num** value multiplied by **sign** to account for the sign.

**Key Points:**

- **Whitespace Handling:** Skips leading whitespace characters.
- **Sign Handling:** Supports both positive and negative integers.
- **Digit Conversion:** Converts ASCII characters to numerical digits.
- **Terminating at Non-Digits:** Stops parsing at the first non-digit character.

**Comments for the main function:**

```
int main(void)
{
    // Define a string containing a number
    char str[6] = "123456";

    // Call ft_atoi to convert the string to an integer
    int result = ft_atoi(str);

    // Print the converted integer
    printf("El número convertido es: %d\n", result);

    return (0); // Indicate successful program termination
}
```