Introduction to Characters in C

Definition and Usage

In C, a character is a single letter, digit, or symbol stored in a variable of type char. Characters are enclosed in single quotes (e.g., 'A', 'b', '1', '@').
Each character is stored as an ASCII value.

ASCII Values:
'A' = 65
'a' = 97
'0' = 48

Character Range and Memory Size

In C, a char variable is typically stored using 1 byte (8 bits) of memory.
The range of values a char can store depends on whether it is signed or unsigned:
- Signed char: -128 to 127
- Unsigned char: 0 to 255

Declaring and Assigning Characters

```
#include <stdio.h>

int main() {
    char letter = 'A';  // Declare a character variable
    char digit = '5';   // Assign a number as a character
    char symbol = '@';  // Assign a special symbol

    printf("Letter: %c\n", letter);
    printf("Digit: %c\n", digit);
    printf("Symbol: %c\n", symbol);

    return 0;
}
```

ASCII Representation of Characters

If you assign a number to a char variable without using single quotes, it will store and print the corresponding ASCII character.
Using %c prints the character representation, while %d prints its ASCII value.

```c
#include <stdio.h>

int main() {
    char num = 65; // ASCII for 'A'

    printf("Character stored: %c\n", num); // Output: A
    printf("ASCII value: %d\n", num); // Output: 65

    return 0;
}
```

Challenge

Task: Fill in the missing parts of the following code to declare and print characters correctly.

```c
// 1. Assign a digit character '8' to a variable
char num = ___;
printf("Character: %c\n", num);

// 2. Print ASCII value of character 'D'
char letter = 'D';
printf("ASCII Value: ___;\n", letter);

// 3. Declare a char variable 'asciiChar' and assign ASCII value 97
___  ________ = ___;
printf("Character: %c\n", asciiChar);

// 4. Declare a char 'ch' and assign 'C' and print it
char __ = __;
printf("Character: %c\n", __);

// 5. Declare a char variable 'symbol' and print the character stored in variable and
its ASCII value
___  ________ = ___;
printf("Symbol: %c\n", ___);
printf("ASCII Value: %d;", ___);
```

Hint:

Always use single quotes for characters in C.