C Programming

Keyboard Input (Standard Input)

The **scanf()** statement is used to input from standard input

You must place the **&** character before the variable name is a scanf() statement

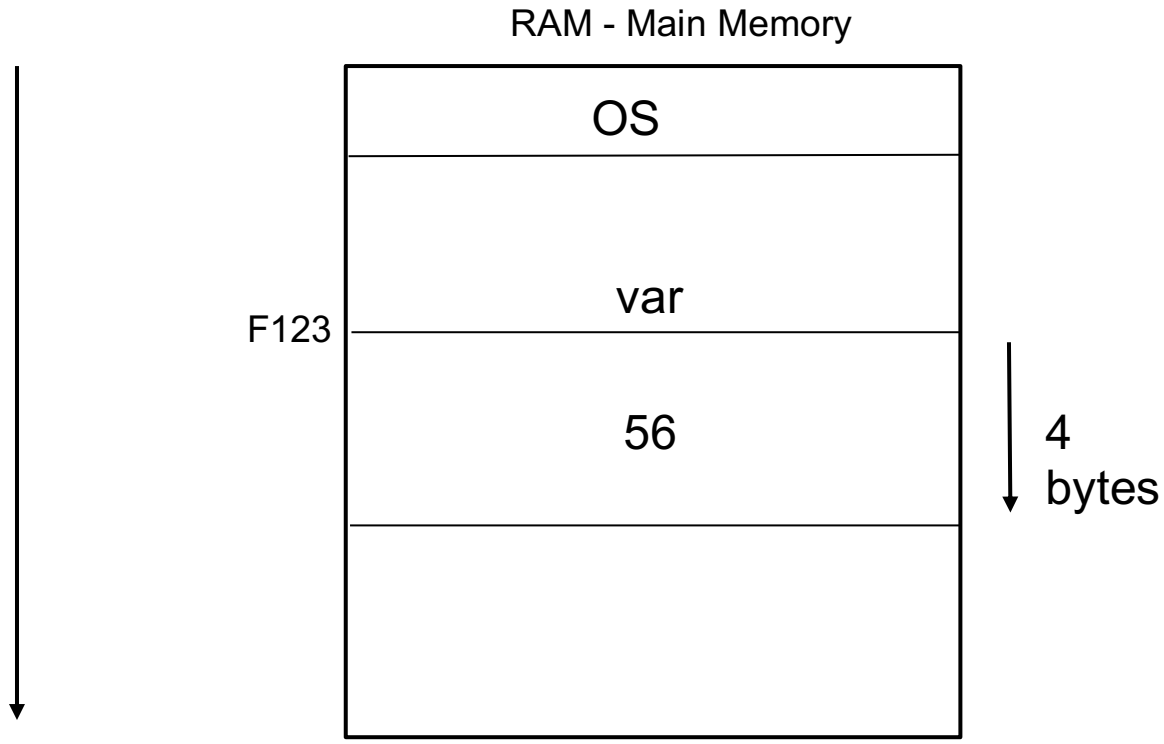
Let's look at the following code sample:

```
/* Program to demonstrate simple standard input
*/

#include <stdio.h>

int main(void)
{
	int var = 0;

	printf("Enter any whole number\n");

	// Ensure you include the & character before the variable name
	scanf("%d", &var);
	printf("var contains %d", var);
	return 0;
}
```

Repl 3.1: https://replit.com/@michaelTUDublin/31-Simple-Standard-Input#main.c

Let's understand why we need the **&** character before the variable name in a scanf() statement. Take a look at this memory map diagram:

0...9, A ... F, 10 ... 19, 1A ...1F, 20 …29. 2A … 2F, etc,…
Hexadecimal format




```
/* Program to demonstrate entering more than 1 data item
*/

#include <stdio.h>

int main(void)
{
	int var1 = 0;
	int var2 = 0;
	int sum = 0;

	printf("Enter first number\n");
	scanf("%d", &var1);

	printf("Enter second number\n");
	scanf("%d", &var2);

	// Get the sum of the numbers entered
	sum = var1 + var2;
```

```
        printf("sum of var1 and var2 is %d", sum);
        return 0;
}
```

Repl 3.2: https://replit.com/@michaelTUDublin/32-Entering-multiple-data-items-p1#main.c

```
/* Program to demonstrate entering more than 1 data item
*/

#include <stdio.h>

int main(void)
{
        int var = 0;
        char my_char = ' ';

        printf("Enter a single number and a single character\n");
        scanf("%d", &var);

        while(getchar() != '\n');

        scanf("%c", &my_char);

       printf("You entered %d and %c", var, my_char);

       return 0;
}
```

Repl 3.3: https://replit.com/@michaelTUDublin/33-Entering-multiple-data-items-p2#main.c

Precision specification in a printf() statement

To specify a floating-point number to x decimal places, you can do the following:

```
/* Program to demonstrate entering more than 1 data item
*/
```

```c
#include <stdio.h>

int main(void)
{
	float var = 0;

	printf("Enter any float number\n");
	scanf("%f", &var);

	// Display the number entered correct to 2 decimal places
	printf("You entered %.2f", var);


	return 0;
}
```

Repl 3.4: https://replit.com/@michaelTUDublin/34-Precision-specification-p1#main.c

By changing the number, e.g., .2 inside the delimiter %f (see above code), this specifies how many decimal places the float number will be displayed to standard output

```c
/* Program to demonstrate entering more than 1 data item
*/

#include <stdio.h>

int main(void)
{
	float var = 0;

	printf("Enter any float number\n");
	scanf("%f", &var);
	printf("You entered %15.2f", var);

	return 0;
}
```

Repl 3.5: https://replit.com/@michaelTUDublin/35-Precision-specification-p2#main.c

Alternative (Quick) way to enter and display **character** data into a character variable

This involves 2 built-in C functions called **getchar()** and **putchar()**

Let's have a look at sample code:

```
/* Program to introduce getchar() and putchar()
*/

#include <stdio.h>

int main(void)
{
	char my_char = ' ';
	printf("Enter any character\n");

	// use the getchar() function
	//scanf("%c", &my_char);

	// same as above
	my_char = getchar();

	//printf("my_char contains %c", my_char);
	printf("\nYou entered ");
	putchar(my_char);

	return 0;
}
```

Repl 3.6: https://replit.com/@michaelTUDublin/36-getchar-and-putchar#main.c

Programming Pitfall

1. Don't forget to include the & in the scanf() statement
2. Regarding precision formatting, only the printf() statement allows this to be done. e.g., printf("you entered %.2f", num). You cannot place the precision formatting inside a scanf() statement. e.g., the following is wrong: scanf("%.2f", &num);