



# printf( )

1. #include <stdio.h> 추가
2. main 함수 바로 위에 아래 함수 추가

```
int _write(int file, unsigned char* p, int len)
{
    HAL_UART_Transmit(&huart1, p, len, 10);
    return len;
}
#ifdef __GNUC__
#define PUTCHAR_PROTOTYPE int __io_putchar(int ch)
#else
#define PUTCHAR_PROTOTYPE int fputc(int ch, FILE *f) //for printf
#endif
PUTCHAR_PROTOTYPE
{
    HAL_UART_Transmit(&huart1, (uint8_t *)&ch, 1, 0xFFFF);
    return ch;
}
```

3. main 함수 안에 아래 추가

```
MX_GPIO_Init();
MX_USART1_UART_Init();
/* USER CODE BEGIN 2 */

setvbuf(stdout, NULL, _IONBF, 0);
```

```
unsigned char value_int=200;
float value_float=12.34567;

printf("Start Send data: ");
HAL_UART_Transmit(&huart1, Tx_Buffer, 5, 2);
printf("\n %d, %f" , value_int, value_float);
```

## 결과

```
Start Send data: HELLO  
200, 12.345670  
Start Send data: HELLO  
200, 12.345670  
Start Send data: HELLO  
200, 12.345670  
Start Send data: HELLO  
200, 12.345670
```



### float 출력 설정

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Project > Properties > C/C++ Build >  
Setting > MCU GCC linker >  
Miscellaneous  
-u\_printf\_float 추가