

Text Mode

by poem
Modified by Alphar

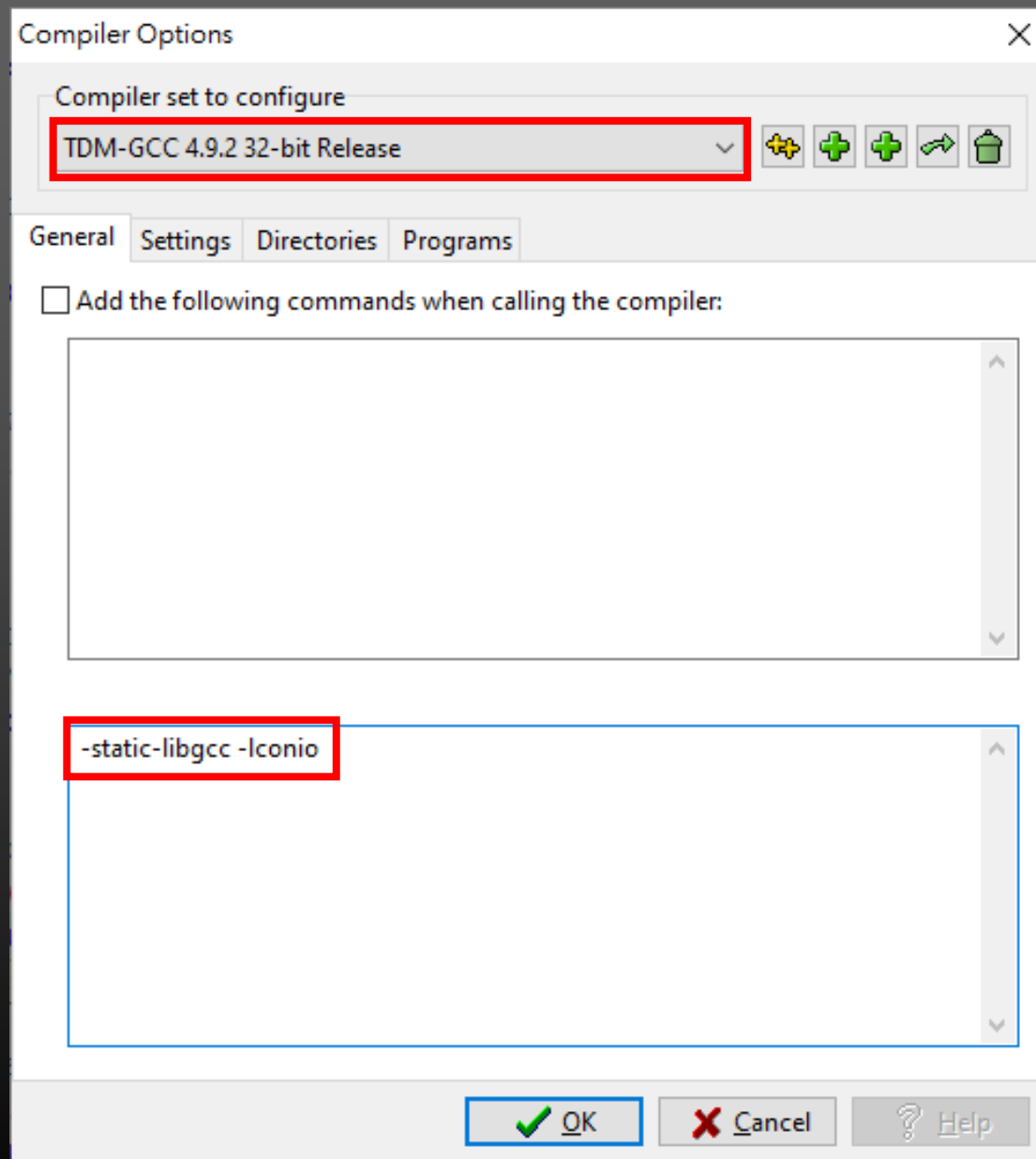
Introduction

- Text Mode
 - Console mode for **text displaying** with specific attributes
 - Unix, DOS, Win32 console, BBS, terminal, ...
- Environment
 - Dev-C++: need extra packages
- Header
 - **conio2.h** (“Devpak for Dev C++” package)

Introduction (cont)

- Package Installation for Dev-C++:
 - Copy “conio2.h” (provided by TA)
to
“C:\Program Files (x86)\Dev-Cpp\MinGW64\include\”
 - Copy “libconio.a” and “libconio_unicode.a”
(provided by TA)
to
“C:\Program Files (x86)\Dev-Cpp\MinGW64\lib32\”
 - Adding linker
 - In Dev-C++ compiler
 - Tools → Compiler Options
 - Compiler set to configure: TDM-GCC 4.7.1 32-bit Release
 - Type “-lconio” in the dialog box below

Introduction (cont)



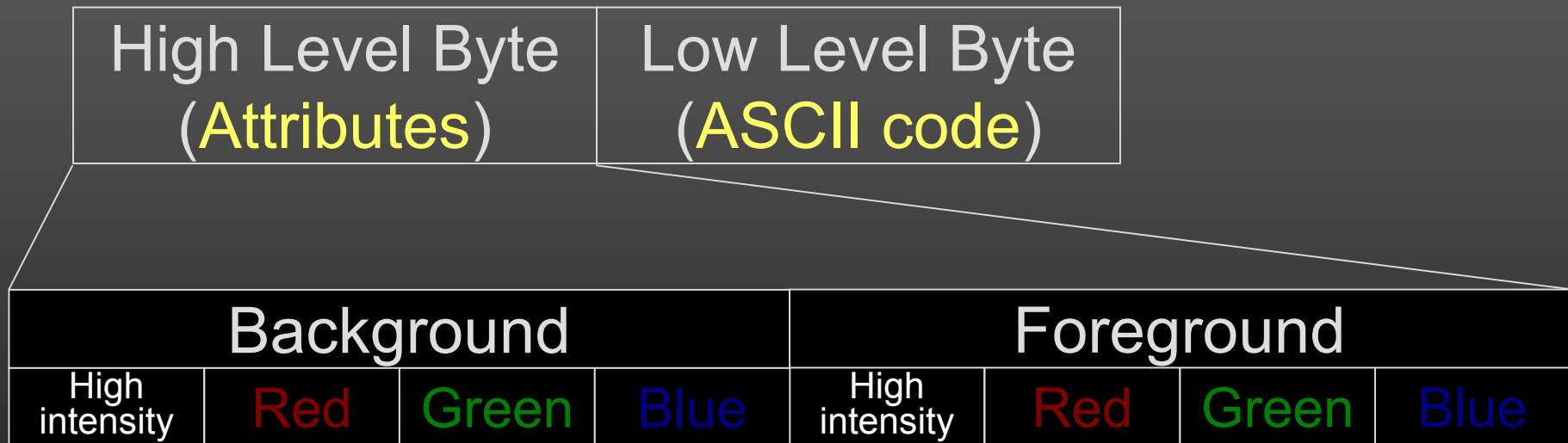
Introduction (cont)

- Window and Coordinate

(1, 1)	(2, 1)	(x, y)	(120, 1)
(1, 2)	(2, 2)		(120, 2)
(1, 25)	(2, 25)		(120, 29)

Showing the Text

- Character Storage in IBM or PS/2 Compatible Computers
 - Using 2 bytes to store a character (**char**)



– Notes:

- Foreground → color of a character

Showing the Text (cont)

- Colors in Foreground and Background

– Background:	7	6	5	4	3	2	1	0
	15	14	13	12	11	10	9	8
– Foreground:	7	6	5	4	3	2	1	
	15	14	13	12	11	10	9	8
– Using with <code>printf()</code> and <code>puts()</code>								

- Color Constants

0: BLACK	1: BLUE	2: GREEN	3: CYAN
4: RED	5: MAGENTA	6: BROWN	7: LIGHTGRAY
8: DARKGRAY	9: LIGHTBLUE	10: LIGHTGREEN	11: LIGHTCYAN
12: LIGHTRED	13: LIGHTMAGENTA	14: YELLOW	15: WHITE

– Example:

11100111 → foreground: gray, background: yellow

Showing the Text (cont)

- Functions

- `void clrscr()`
 - Clearing text mode window, filling with **background** color
 - Moving cursor to (1, 1)
- `void gotoxy(int x, int y)`: positioning cursor at (x, y) in a text window
 - `gotoxy(10, 26)`: moving cursor to (10, 26)
- `int wherex()`, `int wherey()`: gives current **horizontal/vertical** cursor position
 - Cursor at (12, 34), `x = wherex()`; `y = wherey()`;
➔ `x = 12, y = 34`

Showing the Text (cont)

• Functions (cont)

- void `clreol()`: clearing to end of line in text window
 - abcde**fg**hijkl, cursor between e and f → abcde left
- void `delline()`: deleting a line in text window
 - 1234567
abcde**fg**, cursor between e and f → 1234567 left
ABCDEF**G** ABCDEF**G**
- void `insline()`: Inserting blank line in text window at cursor position
 - 1234567, cursor between E and F → 1234567
ABCDE**FG** ABCDEFG
ABCDEF**G** ABCDEF**G**

👉 text01.cpp

Showing the Text (cont)

- Functions (cont)

- void `textcolor(int newcolor)`: selecting a new **character color (foreground)** in text mode

- `textcolor(YELLOW)`:
setting text to **yellow**

- void `textbackground(int newcolor)`:
selecting a new text **background** color

- `textbackground(CYAN)` :
setting **text to cyan background**

Recaps

- Bit Operation
 - \ll, \gg : left- and right- shift
 - $a = 5$
 - $a \ll 4 = (101)_2 \ll (4)_{10} = (1010000)_2 = (80)_{10}$
 - $a \gg 2 = (101)_2 \gg (2)_{10} = (1)_2 = (1)_{10}$
- Character Storage in IBM or PS/2 Compatible Computers

Background				Foreground			
High intensity	Red	Green	Blue	High intensity	Red	Green	Blue

Showing the Text (cont)

• Functions (cont)

- `void textattr(int newattr):` setting text attributes (**foreground** & **background**) for text-window functions
 - Using (**background** \ll 4) + (**foreground**) to set the attributes
 - For example, try to set the background color to `LIGHTGRAY` (0111) and foreground to `LIGHTBLUE` (1001):
 - **Foreground**: set to 1001 (the first 1 means high intensity)
 - **Background**: $0111xxxx = 01110000 + xxxx = (111 \ll 4) + xxxx$
 - `textattr((BROWN \ll 4) + WHITE):`
 Setting **white foreground, brown background**

☞ `text02.cpp`

Showing the Text (cont)

- Functions (cont)

- void lowvideo()

- Selecting low-intensity text characters (clearing the high-intensity bit)

- void highvideo()

- Selecting high-intensity text characters (setting the high-intensity bit)

- void normvideo()

- Selecting normal-intensity text characters (using pre-set text attributes)

☞ text03.cpp

Showing the Text (cont)

- Exercise
 - Writing a program to output the following text.
Referring to slide 7 for the colors

```
Climb every mountain  
Ford every stream  
Follow every rainbow  
Till you find your dream
```