



Console Shenanigans

Week 2

C:\Users\brend\source\repos\VGATestProject\x64\Release\VGATestProject.exe (process 70484) exited with code 0.
Press any key to close this window . . .



Microsoft Visual Studio Debu! ×



Encoding



ASCII

Dec	Hx	Oct	Char	Dec	Hx	Oct	Html	Chr	Dec	Hx	Oct	Html	Chr	Dec	Hx	Oct	Html	Chr
0	0	000	NUL (null)	32	20	040	 	Space	64	40	100	@	@	96	60	140	`	`
1	1	001	SOH (start of heading)	33	21	041	!	!	65	41	101	A	A	97	61	141	a	a
2	2	002	STX (start of text)	34	22	042	"	"	66	42	102	B	B	98	62	142	b	b
3	3	003	ETX (end of text)	35	23	043	#	#	67	43	103	C	C	99	63	143	c	c
4	4	004	EOT (end of transmission)	36	24	044	$	\$	68	44	104	D	D	100	64	144	d	d
5	5	005	ENQ (enquiry)	37	25	045	%	%	69	45	105	E	E	101	65	145	e	e
6	6	006	ACK (acknowledge)	38	26	046	&	&	70	46	106	F	F	102	66	146	f	f
7	7	007	BEL (bell)	39	27	047	'	'	71	47	107	G	G	103	67	147	g	g
8	8	010	BS (backspace)	40	28	050	((72	48	110	H	H	104	68	150	h	h
9	9	011	TAB (horizontal tab)	41	29	051))	73	49	111	I	I	105	69	151	i	i
10	A	012	LF (NL line feed, new line)	42	2A	052	*	*	74	4A	112	J	J	106	6A	152	j	j
11	B	013	VT (vertical tab)	43	2B	053	+	+	75	4B	113	K	K	107	6B	153	k	k
12	C	014	FF (NP form feed, new page)	44	2C	054	,	,	76	4C	114	L	L	108	6C	154	l	l
13	D	015	CR (carriage return)	45	2D	055	-	-	77	4D	115	M	M	109	6D	155	m	m
14	E	016	SO (shift out)	46	2E	056	.	.	78	4E	116	N	N	110	6E	156	n	n
15	F	017	SI (shift in)	47	2F	057	/	/	79	4F	117	O	O	111	6F	157	o	o
16	10	020	DLE (data link escape)	48	30	060	0	0	80	50	120	P	P	112	70	160	p	p
17	11	021	DC1 (device control 1)	49	31	061	1	1	81	51	121	Q	Q	113	71	161	q	q
18	12	022	DC2 (device control 2)	50	32	062	2	2	82	52	122	R	R	114	72	162	r	r
19	13	023	DC3 (device control 3)	51	33	063	3	3	83	53	123	S	S	115	73	163	s	s
20	14	024	DC4 (device control 4)	52	34	064	4	4	84	54	124	T	T	116	74	164	t	t
21	15	025	NAK (negative acknowledge)	53	35	065	5	5	85	55	125	U	U	117	75	165	u	u
22	16	026	SYN (synchronous idle)	54	36	066	6	6	86	56	126	V	V	118	76	166	v	v
23	17	027	ETB (end of trans. block)	55	37	067	7	7	87	57	127	W	W	119	77	167	w	w
24	18	030	CAN (cancel)	56	38	070	8	8	88	58	130	X	X	120	78	170	x	x
25	19	031	EM (end of medium)	57	39	071	9	9	89	59	131	Y	Y	121	79	171	y	y
26	1A	032	SUB (substitute)	58	3A	072	:	:	90	5A	132	Z	Z	122	7A	172	z	z
27	1B	033	ESC (escape)	59	3B	073	;	;	91	5B	133	[[123	7B	173	{	{
28	1C	034	FS (file separator)	60	3C	074	<	<	92	5C	134	\	\	124	7C	174	|	
29	1D	035	GS (group separator)	61	3D	075	=	=	93	5D	135]]	125	7D	175	}	}
30	1E	036	RS (record separator)	62	3E	076	>	>	94	5E	136	^	^	126	7E	176	~	~
31	1F	037	US (unit separator)	63	3F	077	?	?	95	5F	137	_	_	127	7F	177		DEL

Source: www.LookupTables.com

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Extended ASCII

128	Ç	144	É	160	á	176	░	192	Ł	208	„	224	α	240	≡
129	ü	145	æ	161	í	177	▒	193	ł	209	ŧ	225	β	241	±
130	é	146	Æ	162	ó	178	▓	194	ṭ	210	π	226	Γ	242	≥
131	â	147	ô	163	ú	179		195	ṭ	211	ℓ	227	π	243	≤
132	ä	148	ö	164	ñ	180	┆	196	—	212	ℓ	228	Σ	244	∫
133	à	149	ò	165	Ñ	181	┆	197	+	213	ƒ	229	σ	245	∫
134	â	150	û	166	ª	182		198	ƒ	214	ƒ	230	μ	246	÷
135	ç	151	ù	167	º	183	π	199		215	‡	231	τ	247	≈
136	ê	152	ÿ	168	¿	184	ŕ	200	ℓ	216	‡	232	Φ	248	°
137	ë	153	Ö	169	┐	185		201	ƒ	217	┐	233	⊕	249	·
138	è	154	Û	170	└	186		202	„	218	┐	234	Ω	250	·
139	ï	155	◊	171	½	187	ŕ	203	ŧ	219	■	235	δ	251	√
140	î	156	£	172	¼	188	┐	204	ŧ	220	■	236	∞	252	∞
141	ì	157	¥	173	¡	189	┐	205	=	221	■	237	φ	253	²
142	Ä	158	£	174	«	190	┐	206	ŧ	222	■	238	ε	254	■
143	Å	159	ƒ	175	»	191	┐	207	„	223	■	239	∩	255	

Source: www.LookupTables.com

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Using Ascii

```
#include <iostream>
```

```
std::string userInput;
```

```
std::cout << (char) 227;
```

```
// Prints “ $\pi$ ”
```

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Unicode

Encodes for all characters!

👨‍👩‍👧‍👦, 中文, 日本語, عربي, עברית, etc...



Use long char for these, as they're more than 1 byte

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Using Unicode

The Linux or Mac Terminals use it by default, so just type the characters and print them.

However, the Windows Console doesn't default to UTF-8.

Solution:

```
#include <windows.h>

#pragma execution_character_set("utf-8")

int main() {

    SetConsoleOutputCP(65001);

    std::cout << "こんにちは、コンスルさん ";

}
```

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ANSI Escape Codes



Did you spell ASCII wrong?

ANSI control how the console renders text.

Essentially strings read by the console as instructions instead of text.

Helpful Resource:

<https://gist.github.com/fnky/458719343aabd01cfb17a3a4f7296797>

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ANSI Implementation

ASCII Characters

- 7. “\a” : terminal bell (BEL)
- 8. “\b” : backspace (BS)
- 9. “\t” : horizontal tab (TAB)
- 10. “\n” : new line (LF)
- 11. “\v” : vertical tab (VT)
- 13. “\r” : carriage return (CR)
- 27. “\033[“ , “\x1B[“ , or “\e[“ :
Escape (ESC)

Typing Special Characters

- “\” : octal
- (char) : decimal
- “\x” : hexadecimal
- “\u” : unicode
- “\\” : \

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Escape Codes

Erasing Stuff

ESC[K : Erase Line After Cursor

ESC[1K : Erase Line Before Cursor

ESC[2K : Erase Line

ESC[J : Erase Screen After Cursor

ESC[1J : Erase Screen Before Cursor

ESC[2J : Erase Screen

ESC[3J : Erase Saved Lines

Style

ESC[0m : Clear Style

ESC[1m : Bold

ESC[2m : Faint/Dim

ESC[3m : Italic

ESC[4m : Underline

ESC[5m : Blinking

ESC[9m : Strikethrough

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Escape Codes Continued

Byte Color

Chart on Right

ESC[{color code}m

RGB Color

ESC[38;2;{r};{g};{b}m : FG Color

ESC[48;2;{r};{g};{b}m : BG Color

Color Name	Foreground Color Code	Background Color Code
Black	30	40
Red	31	41
Green	32	42
Yellow	33	43
Blue	34	44
Magenta	35	45
Cyan	36	46
White	37	47
Default	39	49

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Examples

“\x1B[1;4;41mHELLO!” -> **HELLO!**

“\033[3;9;33mmy soul” -> *my soul*

“\x1B[38;2;100;150;255m:P” -> :P

“\x1B[1;35;47m\xF1\344H” -> ±ΣH

I think you get the vision by this point...

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Assignment



ASCII Art

Print ASCII art in console that changes color and clears.

1. Have the art change color in the console
2. Have the art print in the console
3. Clear the art from the terminal at least once

(This assignment should be a joke. As in, make it funny. Don't just make rainbow text. please...)

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