

Lab 4

Comp 11 - Summer Session — Random Password Generator

4.1 Description

In this lab we will write some functions to generate a random password. Never again will you have to think of a password. We will also explore the string library.

Our objectives are the following:

- Write a single function called **randomPassword** to generate random strings.
 - The password must be at least 8 characters long.
 - The password must contain at least 1 number.
 - The password must contain at least 1 special symbol.
 - How you decide to generate this password (and how random they are) is up to you beyond these requirements.
- Understand ascii numbers
- Play with some string functions

4.2 Files

You may use the following code to help get you started. Your program does not need to loop or do anything fancy, just generate a random password that meets the above requirements and exit.

```
1 #include <iostream>
2 #include <string>
3 #include <stdlib.h>
4 #include <time.h>
```

```

5
6 // Desc: Generates a random password
7 // input: Length of the random password
8 // output: a string with random characters
9 std::string randomPassword(int length){
10     std::string result = "";
11
12     // potentially useful code
13     // initialize random seed:
14     // srand (time(NULL));
15     // generate secret number between 1 and 10: */
16     // iSecret = rand() % 10 + 1;
17     return result;
18 }
19
20 int main(){
21     std::cout << randomPassword(8) << std::endl;
22
23     return 0;
24 }

```

Listing 4.1: Random Password

4.3 Some Background

Characters (i.e. char) in C++ are encoded as integers. One of the common encodings is ascii. <http://en.cppreference.com/w/cpp/language/ascii>

```

1 #include <iostream>
2
3 int main(){
4     // Example char from an integer.
5     // You can remove this code
6     char A = 65;
7
8     std::cout << "chars hold values 0-255.\n";
9     std::cout << "When chars store in int instead of a character ,
10    see what happens\n";
11    std::cout << "65 corresponds to the character: " << A << "\n";
12
13    return 0;
14 }

```

Listing 4.2: This code sample hints how we can use a random number generator to create characters

4.4 Submission

```

1 provide compl1 lab4 first_file.cpp second_file.cpp third_file.cpp

```

Listing 4.3: Submit Assignment

dec	ch	dec	ch	dec	ch	
0	NUL (null)	32	(space)	64	@	
1	SOH (start of header)	33	!	65	A	
2	STX (start of text)	34	"	66	B	
3	ETX (end of text)	35	#	67	C	
4	EOT (end of transmission)	36	\$	68	D	
5	ENQ (enquiry)	37	%	69	E	
6	ACK (acknowledge)	38	&	70	F	
7	BEL (bell)	39	'	71	G	
8	BS (backspace)	40	(72	H	
9	HT (horizontal tab)	41)	73	I	
10	LF (line feed - new line)	42	*	74	J	
11	VT (vertical tab)	43	+	75	K	
12	FF (form feed - new page)	44	,	76	L	
13	CR (carriage return)	45	-	77	M	
14	S0 (shift out)	46	.	78	N	
15	SI (shift in)	47	/	79	O	
16	DLE (data link escape)	48	0	80	P	
17	DC1 (device control 1)	49	1	81	Q	
18	DC2 (device control 2)	50	2	82	R	
19	DC3 (device control 3)	51	3	83	S	
20	DC4 (device control 4)	52	4	84	T	
21	NAK (negative acknowledge)	53	5	85	U	
22	SYN (synchronous idle)	54	6	86	V	
23	ETB (end of transmission block)	55	7	87	W	
24	CAN (cancel)	56	8	88	X	
25	EM (end of medium)	57	9	89	Y	
26	SUB (substitute)	58	:	90	Z	
27	ESC (escape)	59	;	91	[
28	FS (file separator)	60	<	92	\	
29	GS (group separator)	61	=	93]	
30	RS (record separator)	62	>	94	^	
31	US (unit separator)	63	?	95	_	
					96	`
					97	a
					98	b
					99	c
					100	d
					101	e
					102	f
					103	g
					104	h
					105	i
					106	j
					107	k
					108	l
					109	m
					110	n
					111	o
					112	p
					113	q
					114	r
					115	s
					116	t
					117	u
					118	v
					119	w
					120	x
					121	y
					122	z
					123	{
					124	
					125	}
					126	~
					127	DEL (delete)

Figure 4.1: The image above shows the int value that corresponds with a char.

4.5 Going Further

Did you enjoy this lab? Want to try out some additional commands to go further?

- Write an additional `toUpper(char a)` and `toLower(char a)` functions that return an upper or lower case character. Make sure to valid input.