

Programming in C

Dr. Neill Campbell
Neill.Campbell@bristol.ac.uk

University of Bristol

July 7, 2021



Table of Contents

1 Characters & Strings

Storage of Characters

- Characters are stored in the machine as one byte (generally 8-bits storing one of **256** possible values).
- These may be thought of as characters, or very small integers.
- Only a subset of these 256 values are required for the printable characters, space, newline etc.
- Declaration:

```
char c;
```

```
c = 'A';
```

```
or :
```

```
char c1 = 'A', c2 = '*', c3 = ';' ;
```

- The particular integer used to represent a character is dependent on the encoding used. The most common of these, used on most UNIX and PC platforms, is ASCII.

lowercase	'a'	'b'	'c'	...	'z'
ASCII value	97	98	99	...	112
uppercase	'A'	'B'	'C'	...	'Z'
ASCII value	65	66	67	...	90
digit	'0'	'1'	'2'	...	'9'
ASCII value	48	49	50	...	57
other	'&'	'*'	'+'	...	
ASCII value	38	42	43	...	

Using Characters

- When using `printf()` and `scanf()` the formats `%c` and `%d` do very different things :

```
char c = 'a'
printf("%c\n", c); /* prints : a */
printf("%d\n", c); /* prints : 97 */
```

- Hard-to-print characters have an escape sequence i.e. to print a newline, the 2 character escape `'\n'` is used.