Programming with C I

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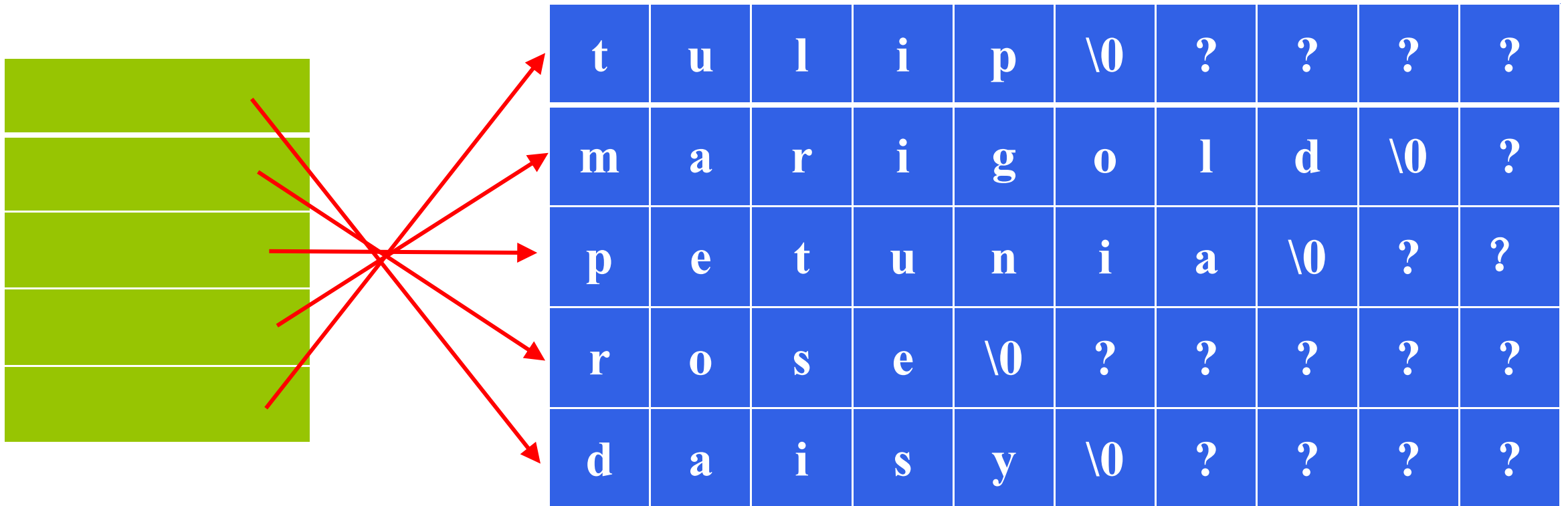**CSCI 112**

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Arrays of Pointers
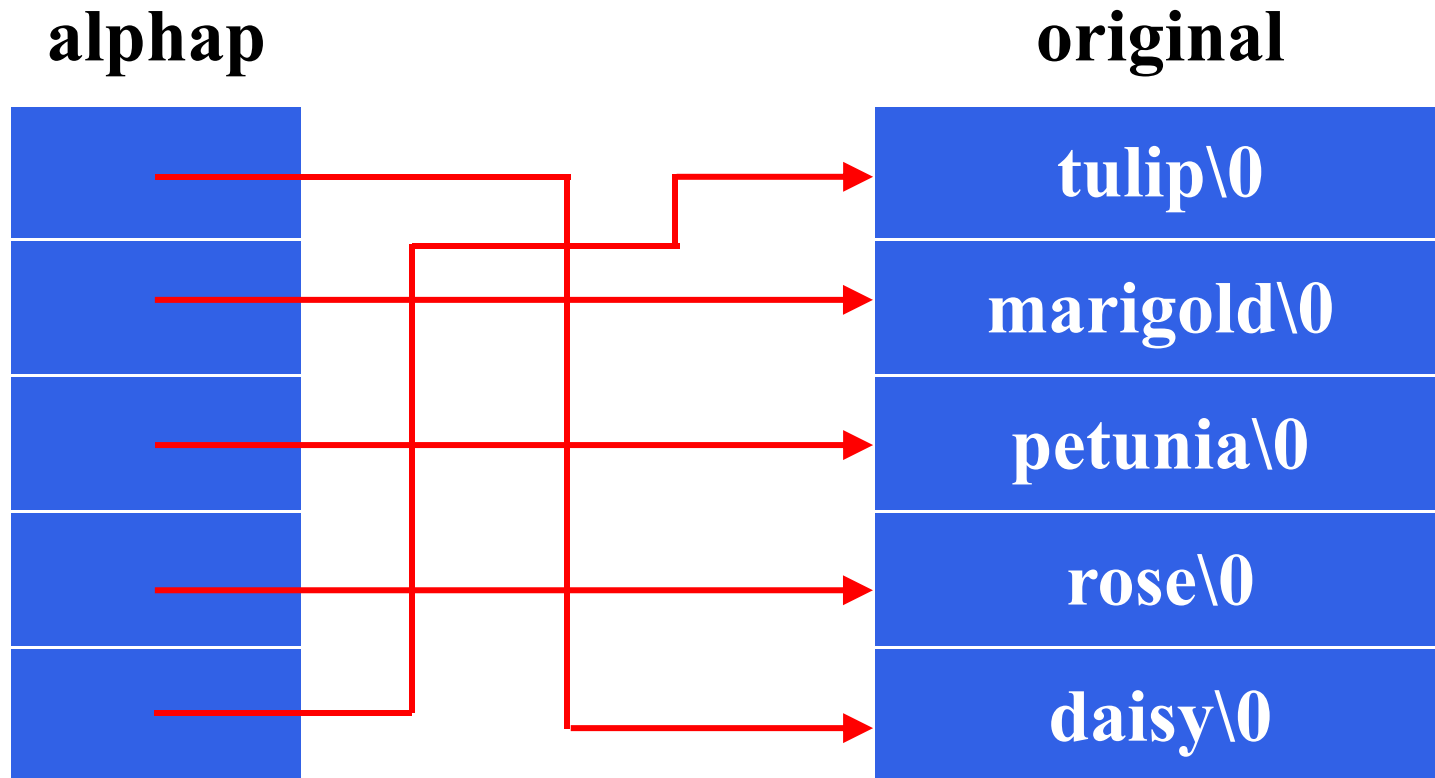
➤ **When sorting a list of strings, there is a lot of copying of characters from one memory cell to another.**

- 3 operations for every exchange

➤ **C represents every array by its starting address.**

➤ **Consider an array of pointers, each element the address of a character string.**

Arrays of Pointers

flowers

t	u	l	i	p	\0	?	?	?	?
m	a	r	i	g	o	l	d	\0	?
p	e	t	u	n	i	a	\0	?	?
r	o	s	e	\0	?	?	?	?	?
d	a	i	s	y	\0	?	?	?	?

Figure An Array of Pointers

String-to-Number and Number-to-String Conversions

Table Review of Use of Scanf

Declaration	Statement	Data	Value Stored
char t	scanf("%c", &t);	g \n A	 \n A
int n	scanf("%d", &n);	32 -8.6 +19	32 -8 19
double x	scanf("%1f", &x);	4.32 -8 1.76e-3	4.32 -8.0 .00176
char str[10]	scanf("%s", str);	hello\n overlengthy	hello\n overlengthy\0 *(overruns length of str)*

String-to-Number and Number-to-String Conversions

Table Placeholders Used with printf

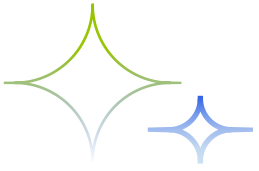| Value	Placeholder	Output (□ means blank)
'a'	%c %3c %-3c	a □□a a□□
-10	%d %2d %4d %-5d	-10 -10 □-10 -10□□
49.76	%.3f %.1f %10.2f %10.3e	49.760 49.8 □□□□□49.76 □4.976e+01
"fantastic"	%s %6s %12s %-12s %3.3s	fantastic fantastic □□□fantastic fantastic□□□ fan

String-to-Number and Number-to-String Conversions

number to string: sprintf

- char s[20];
- int mon = 8, day = 23, year = 1914;
- sprintf(s, "%d/%d/%d", mon, day, year);

string to number: sscanf

- int num;
- double val;
- char word[10];
- sscanf("85 96.2 hello", "%d%lf%s", &num, &val, word);

THE END

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