- CPSC 275: Introduction to Computer Systems

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Fall 2025

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Solution to Homework 20

1. Observe that a pointer of any kind is 4 bytes long. For IA-32, `gcc` allocates 12 bytes for data type `long double`, even though the actual format requires only 10 bytes.

Array	Element size	Total size	Start address	Element i
S	2	14	x_S	$x_S + 2i$
T	4	12	x_T	$x_T + 4i$
V	12	96	x_V	$x_V + 12i$
W	4	16	x_W	$x_W + 4i$

2.
```
Expression    Type      Assembly
S+1           short *   leal 2(%edx),%eax
S[3]          short     movw 6(%edx),%ax
&S[i]         short *   leal (%edx,%ecx,2),%eax
S[4*i+1]      short     movw 2(%edx,%ecx,8),%ax
S+i-5         short *   leal -10(%edx,%ecx,2),%eax
```

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