$\square$

## Address syntax 2

```
#include <stdlib.h>
int main(int argc, char* argv[]) {
    char ash[] = "bin";
    char* cal = "den";
    int eel = 'e';
    int fad = 0x66; // ASCII value for 'f'
    int* gas = &fad;
    int** hem = &gas;
    return EXIT_SUCCESS;
}
```

1. The type of ash[0] is $\square$
2. The type of \&cal[0] is $\square$
3. The number base of eet is irrelevant/moot.
4. The type of *gas is $\square$
5. The type of \&gas is $\square$
6. The type of $* *$ hem is


Complete each sentence above.

For \#1, \#2, \#4, \#5, \#6, the answer should be a type, like this:
0 . The type of eet is

// EXAMPLE

## This is not a quiz.

These questions originally comprised Quiz 1 in Spring 2019.
This semester, we are using them as an in-class exercise.

## Supplement to Solution

The analysis below was not a necessary part of success on this in-class exercise. The questions asked only for the type of various expressions. Determining the type does not require knowing the value of an expression or the contents of memory. This table is provided only to aid those who were using the example code from this exercise as a basis for understanding the contents of memory.

| Stack |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| addr | type* | name* | value | part | J |
| 200 | int | argc | 1 | arguments | 亳 |
| 204 | char** | argv | $\rightarrow$ \{"./foo" $\}$ |  |  |
| 212 | void* |  | $\rightarrow$ | return addr. |  |
| 220 | char[4] | ash | $\begin{gathered} \{98,105,110,0\} \\ \Leftrightarrow\left\{\mathbf{b}^{\prime},{ }^{\prime \prime},{ }^{\prime \prime}\right. \text { 'n', "10'\} "bin" } \end{gathered}$ | local vars |  |
| 224 | char* | cal | 600 |  |  |
| 232 | int | eel | 101 |  |  |
| 236 | int | fad | 102 |  |  |
| 240 | int* | gas | 236 |  |  |
| 248 | int** | hem | 240 |  |  |
| 256 |  |  |  |  |  |
|  |  |  |  |  |  |


| Heap |  |  |
| :---: | :---: | :---: |
| addr | value | $\Gamma_{7}$ |
| 400 |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

Data segment

| addr | value |
| :---: | :---: |
| 600 | $\{100,101,110,0\}$ <br> $\Leftrightarrow\left\{'^{\prime}\right.$, 'e', 'n', '10'\} " "den" |
| 604 |  |

* Note: type and name are not actually stored in memory. They are listed here only for our understanding. Assume sizeof (int) ==4, sizeof (char) ==1, and sizeof (void*) ==8. The program was run as "./foo".

