

Homework 3

Real-Time Embedded Systems - ECEN 121

Due April 25, 2024 – 10:10 AM – 40 points

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Problem 1: (24 points)

Without compiling or executing this code, tell me the data type and value for i, j, k, m, n, and o.

```
#include <stdio.h>
#include <stdlib.h>

int a = 1;
char b = 2;
double c[100];
int *d = &a;
double *e;
double **f;
char g[4][20] = {
    "Apple", "Banana", "Cherry", "Durian"};
char *h;
int i, j, k;
double m, n, o;

int main(int argc, char *argv[]) {
    for (i = 0; i < 100; i++) {
        c[i] = (double) i;
    }
    e = &c[30];
    f = &e;
    h = &b;
    i = *d;
    j = (int) *h;
    k = (int) (g[1] - g[0]);
    m = c[*d];
    n = *e;
    o = (*f)[2];
}
```

Variable	Data Type	Value
i	int	1
j	int	2
k	int	20

m	double	1.0
n	double	30.0
o	double	32.0

Problem 2: (16 points)

In lab 1, you configured the GPIO ports to be able to drive the red and green LEDs.

Now, I want to configure both of those outputs to:

- Be High Speed instead of Low Speed. ->OSPEEDR
- Have a Pull-Up resistor -> PUPDR

Write the bare-metal C code to do this.

```

GPIOB->PUPDR &= ~(0x3<<(2*2));
GPIOB->PUPDR |= (0x1<<(2*2));
GPIOE->PUPDR &= ~(0x3<<(8*2));
GPIOE->PUPDR |= (0x1<<(8*2));
GPIOB->OSPEEDR |= (0x3<<(2*2));
GPIOE->OSPEEDR |= (0x3<<(8*2));

```