

## ITCS 201 – Fundamentals of Programming

### Week 11: Lab Assignments

Name: \_\_\_\_\_ ID: \_\_\_\_\_

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**Due:** today or in a lab session next week

**Instructions:**

- Marking lab assignments will be done in the lab
- **Compile** and **Run** your program
- **Show** and **Explain** the output and your code to the lecturer or the lab assistance.

----- **Lab Assignments** -----

**Lab 1:** Write a program to convert from the THB to USD and JPY. You have to define two global variables that specify the exchange rates between THB-to-USD and THB-to-JPY. Suppose that  $1 \text{ USD} = 32.86 \text{ THB}$  and  $1 \text{ JPY} = 0.29 \text{ THB}$ . You also have to write two functions: one to convert from THB to USD and another from THB to JPY. Finally, test your functions by printing the amount of USD and JPY that can be exchanged with 5000 THB.

**Lab 2:** The following program is trying to find the index or the position of the target value (i.e., target) in the DATA array, and print out whether such target can be found in the array or not. From a quick check, the target can be found at the index 3 in the array, but this program prints out “Cannot find the value 6 in the data”. Please find and fix a bug in this program. (Hint: the bug involves variable scope).

```
#include <stdio.h>

int DATA[8] = {1, 0, 2, 6, 7, 5, 4, 3};
int found_idx = -1;
int i=0;

void search_for(int target);

int main() {
    int target = 6;
    i=7;

    search_for(target);
    if (found_idx != -1) {
        printf("Found the value %d at the index: %d\n", target, found_idx);
    } else {
        printf("Cannot find the value %d in the data\n", target);
    }

    return 0;
}

void search_for(int target) {
    int found_idx = -1;
    for (int i=0 ; i<8 ; i++) {
        if (DATA[i] == target) {
            found_idx = i;
            break;
        }
    }
}
```

**Lab 3:** Write a program to calculate the greatest common divisor (gcd) among four input numbers. You have to write your code in the provided section in the `calculate_gcd.c` file on the MyCourse website.

**Bonus lab:** Extend **Lab 2** by writing another function that determines the minimum value in the `DATA` array.