CSE 1310: Introduction to Computers & Programming
University of Texas at Arlington
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Assignment 1

1. (20%) What is the output of the following code?

```c
#include <stdio.h>

int main() {
    int a = 67, b = 79, c = 68, d = 69;
    printf("%c%c%c%c\n", a, b, c, d);

    return 0;
}
```

   Create a file `answer1.txt` and place the **exact** output in the file.

2. (20%) What is the output of the following code?

```c
#include <stdio.h>

int main() {
    int x = 4, y = 11;
    printf("%d", x);
    printf(" %d\n", y);

    y *= x;
    x /= x;

    printf("%d%d\n", y, x);

    return 0;
}
```

   Create a file `answer2.txt` and place the **exact** output in the file.

3. (20%) The following program calculates the mass of a physical body given the force and acceleration, $m = F/a$. However, it does not produce the correct output.

```c
#include <stdio.h>

int main() {
    int force = 685;
    int acceleration = 9;
    int mass = force / acceleration;
    printf("%d\n", mass);

    return 0;
}
```

   (a) Fix the program so that it produces a correct result.

   (b) Save the code as `problem3.c`.

4. (20%) The surface area of a cube is calculated by combining the area of each of its 6 faces, where each face is a square whose area is the square of its side length. Thus, the surface area of a cube is $A = 6s^2$. The following program attempts to calculate the area of a cube, but does not compile correctly.

```c
#include <stdio.h>

int main() {
    int surface_area = side_length * side_length;
    int side_length = 5;

    printf("Surface Area = %d\n", surface_area);

    return 0;
}
```

   Save your code as `problem4.c`.

5. (20%) Create a program which calculates the force resulting from a body with mass m being acted upon by Earth's gravity, $a \approx 9.81$ m/s^2. Your program should read the value of m from the user.

   (a) Use `scanf()` to read the mass from the user.

   (b) Your program should work with floating point input.

   (c) Equation of Force: $F = m * a$.

   (d) Use a preprocessor directive for the gravitational acceleration of Earth.

   (e) The control string for input should be `"Enter mass: "`.

   (f) The output control string should be `"Force = %f\n"`.

   Example Run

   ```
   Enter mass: 645
   Force = 6327.450195
   ```

   Save your code as `problem5.c`.

Create a `zip` file using the name template `<LASTNAME>_<ID>.zip` which includes the 2 answer files and 3 code files. Submit the `zip` file through Canvas.