COMP500 / ENSE501: Week 11 – Exercise:

EXERCISE NAME: *Function Comments*

Given the following program source code:

```
1  #define _CRT_SECURE_NO_WARNINGS
2  #include <stdio.h>
3
4  float calculate_area(float radius);
5  float calculate_circumference(float radius);
6  float calculate_radius(float diameter);
7  float get_diameter(void);
8  void print_area(float area);
9  void print_circumference(float circumference);
10 void print_diameter_prompt(void);
11
12 int main(void)
13 {
14     float diameter = get_diameter();
15     float radius = calculate_radius(diameter);
16
17     print_area(calculate_area(radius));
18     print_circumference(calculate_circumference(radius));
19
20     return 0;
21 }
22
23 float calculate_area(float radius)
24 {
25     return (3.14159f * radius * radius);
26 }
27
28 float calculate_circumference(float radius)
29 {
30     return (2 * 3.14159f * radius);
31 }
32
33 float calculate_radius(float diameter)
34 {
35     return (diameter / 2.0f);
36 }
37
38 void print_area(float area)
39 {
40     printf("Area: %f\n", area);
41 }
42
```

```
43  float get_diameter(void)
44  {
45      float user_diameter = 0;
46
47      print_diameter_prompt();
48      scanf("%f", &user_diameter);
49
50      return user_diameter;
51  }
52
53  void print_circumference(float circumference)
54  {
55      printf("Circumference: %f\n", circumference);
56  }
57
58  void print_diameter_prompt(void)
59  {
60      printf("Input circle diameter: ");
61  }
```

Add declaration prototypes for each function defined in the program.

Add suitable **assert** pre-conditions to the following functions:

- **calculate_area**
- **calculate_circumference**
- **print_area**
- **print_circumference**

Finally, add function comments to each function in the following style:

```
1   /*
2    * Function: compute_factorial
3    * ----------------------------
4    *   Returns the factorial of the value input
5    *
6    *   input: the number to compute the factorial of
7    *
8    *   returns: the factorial of input
9    *
10   *   pre: input must be positive.
11   *
12   *   post: value returned will be greater than zero.
13   */
14  int compute_factorial(int input)
15  {
16      // Insert function code here...
17  }
```