### 1. Description

This is a two-part programming exercise where decomposition and code reuse is promoted through the use of user-defined functions. The first part of the programming exercise involves drawing ASCII art in the console. The second part of the programming exercise computes the area of a triangle (if possible).

### 2. Functionality Requirements - Part I

In 1992 the book “Men are from Mars, Women are from Venus” was published. For the first part of the programming assignment you must collect user input in your main function, then use this input to select the appropriate drawing function. If the user enters an ‘f’ or ‘F’ your program should draw the symbol for Venus, and if an input of ‘m’ or ‘M’ is given, the symbol for Mars should be drawn. In order to complete this assignment, you will implement the following two user-defined functions:

void drawVenus();

void drawMars();

#### 2.1 Drawing the Venus symbol

The function drawVenus() takes no input parameters and has no return value. The function should draw the Venus symbol exactly as shown below:

\_.

.'|

.---.'

/ \

| |

\ /

`---'

\*\*\*Hint\*\*\*: Do not include whitespace on the right side of printed characters.

#### 2.2 Drawing the Mars symbol

The function drawMars() takes no input parameters and has no return value. The function should draw the Mars symbol exactly like the one shown below.

```

.---.

/ \

| |

\ /

`---'

|

--+--

|

```

\*\*\*Hint\*\*\*: Do not include whitespace on the right side of printed characters.

### 3. Functionality Requirements - Part II

For the second part of the programming assignment you must collect user input in your main function, then use this input to calculate the area of a right triangle; provided that the three input values are appropriate for a right triangle. If they are not, your function should return a -1. In the main function, you will prompt the user for three sides of a right triangle:

- the base

- the vertical

- the hypotenuse

You will implement the following function:

- \*\*double\*\* triangleArea(double, double, double);

#### 3.1 Calculating the Area of a Right Triangle

The function \* triangleArea ()\* takes three parameters of type double, calculates the area, if possible, and returns that area as a double. If the three entered values do not describe a right triangle, a -1.0 is returned.

After the function is called in your main() function, either of the two responses to the input must be given.

If valid dimensions, such as 3, 4, and 5 are given, the output should be:

The area of a right triangle with a base side of 3 inches, a height of 4 inches, and a hypotenuse of 5 inches is 6 square inches

If invalid dimensions, such as 6, 8, 9 are given, the output should be:

Your inputs do not describe a right triangle!

### 4. Getting Started

Start by reading these instructions in their entirety and, if necessary, clarifying with your instructor.

This programming exercise will be completed online and there is a template provided. In the template, update the file header to include your documentation statement, add prototypes for the required functions, stub out the required functions to include headers, then add inline comments. These inline comments are like pseudo-code for the implementation that will follow.

### 5. Helpful Hints

The C standard library includes functions to deal with input and output to the console. Specifically, you will find the following particularly useful:

- \*[stdio.h](https://www.tutorialspoint.com/c\_standard\_library/stdio\_h.htm)\* provides the \*printf()\* and \*scanf()\* functions

\*\*Hint\*\*: A backslash `\` in a string acts as an escape character, such as with a newline\* `\n`. \*So, to print an actual backslash, escape that backslash by prepending another backslash. Ex: The following prints a single backslash:\* `printf("\\");`

### 6. Submission Requirements

This programming exercise will be completed and submitted via ZyBooks. Once your program is complete:

- Change to \*Submit Mode\*

- Click the orange \*Submit for Grading\* button

- Verify your program passed all test cases upon submission earning 20 of 25 available points

- 5 of 25 points are awarded for coding standards, good design, and adherence to instructions and submission requirements