Table of Contents


```
function [cable_length,cable_weight,total_cost] =
 PS06_cableUDF_002_08(bridge_height, distances_deck, num_strand)

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
% ENGR 132
% Program Description
% We are on a civil engineering team working on a pedestrian bridge.
 This
% is user defined function that has three inputs and three output to
% calculate the cable length, cable weight and total cost based on
 data
% input.
%
% Function Call
% [cable_length,cable_weight,total_cost] =
 PS06_cableUDF_002_08(bridge_height, distances_deck, num_strand)
%
% Input Arguments
% 1. Heights from the bridge deck to the cable tower anchorage
% 2. Distances between the tower base and the cable deck anchorage
% 3. Number of strands in the cable
%
% Output Arguments
% 1. Total Cable Length
% 2. Total Cable Weight
% 3. Total Estimated Cost
%
% Assignment Information
%   Assignment:        PS 06, Problem 3
%   Team ID:   002-08
%   Team Member:  Ian Pitman, ipitman@purdue.edu
%   Team Member:  Eu Jin Lee, lee2219@purdue.edu
%   Team Member:  Tomoki Koike, koike@purdue.edu
%   Team Member:  Yi Zhou, zhou823@purdue.edu
%   Contributor:   Name, login@purdue [repeat for each]
%   My contributor(s) helped me:
%     [ ] understand the assignment expectations without
%         telling me how they will approach it.
```

```
%     [ ] understand different ways to think about a solution
%         without helping me plan my solution.
%     [ ] think through the meaning of a specific error or
%         bug present in my code without looking at my code.
%
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
```

INITIALIZATION

```
strand_weight = 1.1; %weight of each strand
costPerKg = 25;     %cost per kg
```

CALCULATIONS

```
cable_lengthvector = sqrt(bridge_height .^2 + distances_deck .^2);
  %get the cable length by Pythagorean theorem

cable_length = sum(cable_lengthvector);    %total cable length

cable_weight = sum(strand_weight * cable_lengthvector .* num_strand);
   %weight of total cables

total_cost = costPerKg * cable_weight;        %cost of all cables
```

COMMAND WINDOW OUTPUT

[cable_length,cable_weight,total_cost] = PS06_cableUDF_002_08(bridge_height, distances_deck, num_strand)

cable_length =

```
675.4893
```

cable_weight =

```
           3.1798e+04
```

total_cost =

```
           7.9495e+05
```

ACADEMIC INTEGRITY STATEMENT

We have not used source code obtained from any other unauthorized source, either modified or unmodified. Neither have we provided access to our code to another. The function we are submitting is our own original work.

Published with MATLAB® R2018a