Table of Contents


```
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
% ENGR 132
% Program Description
% Function Call
% 1. [cone_height, cone_weight] =
 PS06_salt_cone_koike_lee2219(cone_width);
% 2. [windrow_height,windrow_weight] =
 PS06_salt_windrow_ipitman_zhou823(windrow_width,windrow_length);
%
% Input Arguments
% 1. (a)diameter: the diameter or the width of the conical pile
% 2. (a)windrow_width: the diameter of the windrow pile
%    (b)windrow_length: the length of the windrow pile
%
% Output Arguments
% 1. (a)coneHeight: is the calculated height of the cone (scalar)
%    (b)coneWidth: is the calculated weight of the cone  (scalar)
% 2. (a)Windrow height (scalar)
%    (b)Windrow weight (scalar)
% Assignment Information
%   Assignment:   PS 06, Problem 2
%   Team ID:   002-08
%   Team Member:  Tomoki Koike, koike@purdue.edu
%   Team Member:  Eu Jin Lee, lee2219@purdue.edu
%   Team Member:  Yi Zhou, zhou823@purdue.edu
%   Team Member:  Ian Pitman, ipitman@purdue.edu
%   Contributor:  Name, login@purdue [repeat for each]
%   Our contributor(s) helped us:
%     [ ] understand the assignment expectations without
%         telling us how they will approach it.
%     [ ] understand different ways to think about a solution
%         without helping us plan our solution.
%     [ ] think through the meaning of a specific error or
%         bug present in our code without looking at our code.
```

```
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
```

INITIALIZATION

```
cone_width = 21.50;         %the width of the conical pile width (m)
angle_repose = 32;          %the angle of the natrually formed slope of
                            %salt pile, aka angle of repose (degrees)
density_salt = 80;          %the density of salt (lb/ft^3)
windrow_width = 18.35;      %the width of the windrow piles (m)
windrow_length = 45;        %the length of the windrow pile (m)
saltTotal = 24361;         %the total amount of salt (metric tons)
```

CALCULATIONS & FORMATTED TEXT

```
% calculating the height and the weight of the conical pile
[cone_height, cone_weight] = PS06_salt_cone_koike_lee2219(cone_width);

% claculating the number of conical piles to store all the salt
cone_number = saltTotal / cone_weight;

fprintf("The number of conical piles to store all the salt is %.0f.
\n", cone_number);

% calculating the height and the weight of the windrow pile
[windrow_height,windrow_weight] =
 PS06_salt_windrow_ipitman_zhou823(windrow_width,windrow_length);

% calculating the number of windrow piles to store to
% store all the salt
windrow_number = saltTotal / windrow_weight;

fprintf("The number of windrow piles to store all the salt is %.0f.
\n", windrow_number);
```

COMMAND WINDOW OUTPUT

```
% Cone width 21.5m
% callout for the cone
%[cone_height, cone_weight] =
 PS06_salt_cone_koike_lee2219(cone_width);

% callout for the windrow
%[windrow_height,windrow_weight] =
 PS06_salt_windrow_ipitman_zhou823(windrow_width,windrow_length);
```

```
% output
%The height of one conical pile is 6.72 meters.
%The weight of one conical pile is 1062.3 metric tons.
%The number of conical piles to store all the salt is 23.
%The height of one windrow pile is 5.73 meters
%The weight of one windrow pile is 30314.4 metric tons
%The number of windrow piles to store all the salt is 1.
```

ANALYSIS

-- Q1

Executing PS01 and PS06 we were able to observe that the former was faster to output the results. This is possibly because PS01 is only algebraic calculations within one program, whereas PS06 requires the input and output interactions among the execution m-file and the fucntion m-file.

-- Q2

For the output of PS06_salt_cone the function in the command window this gives the printed results which is same as the function execution file outputs. However, the difference is that the the former also outputs the cone_height and the cone_weight values.

-- Q3

This outputs the header for the PS06_salt_cone_koike_lee2219 program which is greatly helpful in that it gives the documentation of the output and input variables and whose code it is.

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.

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