**Jed Hawkins – Save the Village**

**DetermineSpeedPenalty function**

Function: Calculate speed penalty for excess weight

Parameters- Input: Speed – Player attribute that defines how fast the player can move

Total weight – total weight that the player is currently carrying

Strength – player attribute that defines the strength of the player

Output: Speed penalty

Validation rules: Speed cannot be less than 0

Strength cannot be less than 1

If speed penalty is less than 0 then speed penalty is 0

Required: all inputs are required integers

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Speed Penalty Test Matrix | | | | | | | |
|  | Test Cases | | | | | | |
|  | Valid | Invalid | | Boundary | | | |
|  | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Valid | | | | | | | |
| Speed | 50 | -1 | 50 | 0 | 50 | 100 | 100 |
| Weight | 50 | 50 | 50 | 150 | 150 | 0 | 100 |
| Strength | 50 | 50 | 0 | 50 | 1 | 100 | 100 |
| Outputs | | | | | | | |
| Speed Penalty | 0 |  |  | 0 | 50 | 0 | 0 |
| Error |  | Speed less than 0 | Strength less than 0 |  |  |  |  |

DetermineSpeedPenalty(speed, weight, strength) double

BEGIN

IF(speed < 0) THEN

RETURN -1

IF(strength <1) THEN

RETURN -1

IF (weight-strength < 0) THEN

RETURN 0

Penalty = speed \* (weight – strength/(strength \*2))^2

IF(penalty < 0)THEN

Penalty = 0

IF (penalty > speed) THEN

Penalty = speed

RETURN penalty

END

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Cases | | | | | | | |
| Variables | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Speed | 50 | -1 | 50 | 0 | 50 | 100 | 100 |
| Weight | 50 | 50 | 50 | 150 | 150 | 0 | 100 |
| Strength | 50 | 50 | 0 | 50 | 1 | 100 | 100 |
| Penalty | 0 |  |  | 0 | 50 | 0 | 0 |
| Error |  | -1 | -1 |  |  |  |  |