

## Lab 03 Planning sheet

Problem: Let's make a program to calculate the distance traveled based on speed and determine how many points they'd receive if they went that distance.

Calculations:

Time in air:  $\sqrt{(2 * \text{height}) / 9.8}$

Distance travelled: jumper's speed \* time in the air

Points earned:  $60 + (\text{distance} - \text{par}) * \text{points\_per\_meter}$

Outputs:

If points is greater or equal to 61 output "Great job for doing better than par!"

If points is less than 10 output "What happened?"

Otherwise output "Sorry you didn't go very far"

Output the distances travelled and points earned

Potential problems:

- 1) If user inputs the hill type in all caps or first letter capitalized, then set it into all lowercase and compare strings

Algorithm:

1. Explain program to user.
2. Prompt user to input Hill Type.
  - a. If Hill type entered is Normal:
    - i. Height is set to 46.
    - ii. Points per meter is set to 2.
    - iii. Par is set to 90.
  - b. If Hill type entered is Large:
    - i. Height is set to 70.
    - ii. Points per meter is set to 1.8.
    - iii. Par is set to 120.
  - c. Else, output "Please enter correct hill type"
3. Prompt user to input Jumper Speed.
4. Use the formula " $\sqrt{(2 * \text{height}) / 9.8}$ " to calculate Jumper Air-Time.
5. Use the formula "jumper's speed \* time in the air" calculate Distance Traveled.

6. Use the formula  $60 + (\text{distance} - \text{par}) * \text{points\_per\_meter}$  calculate number of points earned.
7. If earned points is greater or equal to 61.
  - a. output "Great job for doing better than par!"
8. If earned points is less than 10.
  - a. output "What happened?"
9. Otherwise, output "Sorry, you didn't go very far"
10. Output total distance traveled, and points earned.