Assignment 1

Q1, Q2: Loaning money from a long

An a long is charging a interest rate of rate=2% per week. You borrow RM=1000 from this a long.

Q1: Write a code to determine how many weeks it takes to clear off the loan if you are paying an installment of *x* per week.

Q2: Modify your code to determine what is the installment *x* you need to pay every week if you wish to finish off the loan in the *m* week.

Your code should be ‘robust’ and flexible. To this ends, you have to assign the numerical values in the problems to properly named variables. Your code can then be used in the future without making any modification except reassigning the values of these variables.

Q3 Zeno paradox

Achilles, the fleet-footed hero of the Trojan War, is engaged in a race with a lowly tortoise, which has been granted a head start. Achilles' task initially seems easy, but he has a problem. Before he can overtake the tortoise, he must first catch up with it. While Achilles is covering the gap between himself and the tortoise that existed at the start of the race, however, the tortoise creates a new gap. The new gap is smaller than the first, but it is still a finite distance that Achilles must cover to catch up with the animal. Achilles then races across the new gap. To Achilles' frustration, while he was scampering across the second gap, the tortoise was establishing a third. The upshot is that Achilles can never overtake the tortoise. No matter how quickly Achilles closes each gap, the slow-but-steady tortoise will always open new, smaller ones and remain just ahead of the Greek hero. [Adapted from: http://www.slate.com/articles/health_and_science/science/2014/03/zeno_s_paradox_how_to_explain_the_solution_to_achilles_and_the_tortoise.html]

Write a Do-loop to calculate the times and distances between Achilles and the tortoise every time Achilles crosses the gap between himself and the tortoise that existed at the start of the race. Given the initial values of (1) the initial gap, (2) the speed of the tortoise, (3) the speed of Achilles, you code should tell the users how long it takes for Achilles to overtake the tortoise, and how many times Achilles races across the gaps. Does it take infinite number of time for Achilles to cross the gaps? Does Achilles ever over take the tortoise?