**Exercise one.**

#include <iostream>

#include <ctime>

using namespace std;

int main() {

int particles = 1000,

direction,

oldDirection,

collision,

forward;

double escape = 0;

srand(time(NULL));

while (particles != 0) { // the intial of the simulation

oldDirection = 0;

collision = 0;

forward = 0;

while (collision < 10 && (forward >= 0 && forward < 6)) {//forward 6 positions without exceeding 10 collisions

direction = rand() % 4 + 1; //the random gen from 1-4, directions are assigned by the constants in order to go forward one

// or backward one

if (oldDirection != direction) {//comparing old direction to new direction

collision++;

oldDirection = direction;

}

if (direction == 1) {// the partical moves forward

forward++;

}

if (direction == 2) {// the partical moves backward

forward--;

}

// right and left direction does not affect the direction of the exit position.

}

if (forward >= 6 && collision < 10) {

++escape;

}

particles--;// partical disappears

}

cout << (escape / 1000 \* (100)) << " % of the partical have escaped"<<endl;

return 0;

}



