**MARKS AWARDED: 100**

Well done ☺

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\* CS1010 AY2011/2 Semester 2 Lab3 Ex1

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\* montecarlo.c

\* Description: Prompt the user to enter the number of darts thrown.

\* Through the use of a random number generator, determine the

\* number of darts that landed inside the unit circle's quadrant

\* and use it to approximate the value of pi

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#include <stdio.h>

#include <stdlib.h>

#include <time.h>

int throwDarts(int);

int land\_Inside(void);

int main(void)

{

int darts\_total, // number of darts to be thrown

darts\_inside; // number of darts inside quadrant

double approx\_Pi;

srand (time(NULL));

printf("How many darts? ");

scanf("%d", &darts\_total);

darts\_inside = throwDarts(darts\_total);

printf("Darts landed inside unit circle's quadrant = %d\n", darts\_inside);

approx\_Pi = 4.0000\*darts\_inside/darts\_total;

printf("Approximated pi = %.4f\n", approx\_Pi);

return 0;

}

// Compute and return the number of darts that landed inside the unit circle

int throwDarts(int darts\_total)

{

int i, // Counter for loop

count = 0;

for (i=1;i<=darts\_total;i++)

if (land\_Inside())

count++;

return count;

}

// Check if the dart thrown landed inside the unit circle

int land\_Inside(void)

{

double x,y;

x = (double)rand()/RAND\_MAX;

y = (double)rand()/RAND\_MAX;

if (x\*x+y\*y<=1)

return 1;

else

return 0;

}