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#include <stdio.h>

#include <stdlib.h>

int setPasscode(int n);

void randomPasscodeSearch(int passcode, int n);

void orderedPasscodeSearch(int passcode, int pd);

void main()

{

printf("WELCOME TO THE PASSCODE CRAKER 9 MILLIon!\n");

printf("---------------------------------------------------\n\n");

int pass1 = setPasscode(9);

printf("First passcode is: %d.\n", pass1);

randomPasscodeSearch(pass1, 9);

orderedPasscodeSearch(pass1, 1);

printf("\n");

int pass2 = setPasscode(99);

printf("Second passcode is: %d.\n", pass2);

randomPasscodeSearch(pass2, 99);

orderedPasscodeSearch(pass2, 2);

printf("\n");

int pass3 = setPasscode(999);

printf("Third passcode is: %d.\n", pass3);

randomPasscodeSearch(pass3, 999);

orderedPasscodeSearch(pass3, 3);

printf("\n");

int pass4 = setPasscode(9999);

printf("4th passcode is: %d.\n", pass4);

randomPasscodeSearch(pass4, 9999);

orderedPasscodeSearch(pass4, 4);

printf("\n");

int finalPass = 277;

printf("The final passcode is: %d.\n", finalPass);

randomPasscodeSearch(finalPass, 999);

orderedPasscodeSearch(finalPass, 3);

}

int setPasscode(int n)

{

printf("Now generating passcode. Passcode maximum value is: %d.\n", n);

return rand() % n; //random number between 0 and n

}

void randomPasscodeSearch(int passcode, int n)

{

int attempt = rand() % n; //the first attempt

int count = 1;

while (attempt != passcode) //keep generating random codes until a match is found

{

attempt = rand() % n;

count++;

}

printf("Brute force search...\nPasscode is %d. It took %d attempts to randomly guess the passcode.\n", attempt, count);

}

void orderedPasscodeSearch(int passcode, int pd)

{

//find the maximum number for the maximum digits

int maximumAttempt = 0;

switch (pd)

{

case 1 :

maximumAttempt = 9;

break;

case 2 :

maximumAttempt = 99;

break;

case 3 :

maximumAttempt = 999;

break;

case 4 :

maximumAttempt = 9999;

break;

case 5 :

maximumAttempt = 99999;

break;

case 6 :

maximumAttempt = 999999;

break;

case 7 :

maximumAttempt = 9999999;

break;

default :

maximumAttempt = 0;

}

int attempt = 0; //the passcode being checked.

int count = 1; //count the number of times it takes.

while (attempt != passcode) //keep counting codes until a match is found

{

attempt++;

count++;

}

printf("Ordered search...\nPasscode is %d. It took %d attempts to guess the passcode.\n", attempt, count);

}

