**Jakub Dudek**

**Sprawozdanie Laboratorium 4**

**1. Generowanie haseł**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Małe litery | | Małe i duże litery | | Małe, duże i znaki specjalne | |
| hasła | czas | pamięć | czas | pamięć | czas | pamięć |
| 3 znakowe | 0,072s | 85,8 KB | 0,559s | 686 KB | 4,067s | 4,08 MB |
| 4 znakowe | 1,753s | 2,61 MB | 30,433s | 41,8 MB | 6m28s | 466 MB |
| 5 znakowe | 45,249s | 79,3 MB | 24m 41s | 2,47 GB | ~11h | ~54GB |
| 6 znakowe | 19m 46s | 2,30 GB | ~11h | ~147 GB | ~572h | ~6TB |

#include <iostream>

#include <fstream>

#include <time.h>

using namespace std;

void generate(string word, char list[], int size, int count, ofstream& file, int& counter)

{

if (count==0)

{

cout<<word<<endl;

counter++;

}

else

{

for (int i=0;i<size;i++)

{

generate(word + list[i], list, size, count-1, file, counter);

}

}

}

int main()

{

int counter;

clock\_t start, end;

ofstream file;

double passed;

char list[26] = {};

char list2[52] = {};

char list3[95] = {};

int i=0;

for(i;i<26;i++)

{

list[i]=i+97;

list2[i]=i+97;

}

i=0;

for(int j=26;j<52;j++)

{

list2[j]=i+65;

i++;

}

for(int k=0;k<95;k++)

{

list3[k]=k+32;

}

cout<<"Male"<<endl;

start = clock();

file.open("trzy\_male.txt");

generate("", list, 26, 3, file, counter);

file.close();

end = clock();

passed = double(end-start)/CLOCKS\_PER\_SEC;

cout<<"3-"<<counter<<endl;

cout<<"Czas: "<<passed<<"s"<<endl;

/\*

start = clock();

file.open("cztery\_male.txt");

counter=0;

generate("", list, 26, 4, file, counter);

file.close();

end = clock();

passed =double(end-start)/CLOCKS\_PER\_SEC;

cout<<"4-"<<counter<<endl;

cout<<"Czas: "<<passed<<"s"<<endl;

start = clock();

file.open("piec\_male.txt");

counter=0;

generate("", list, 26, 5, file, counter);

file.close();

end = clock();

passed =double(end-start)/CLOCKS\_PER\_SEC;

cout<<"5-"<<counter<<endl;

cout<<"Czas: "<<passed<<"s"<<endl;

start = clock();

file.open("szesc\_male.txt");

counter=0;

generate("", list, 26, 6, file, counter);

file.close();

end = clock();

passed =double(end-start)/CLOCKS\_PER\_SEC;

cout<<"6-"<<counter<<endl;

cout<<"Czas: "<<passed<<endl;

cout<<"Male i duze"<<endl;

start = clock();

file.open("trzy\_male\_duze.txt");

generate("", list2, 52, 3, file, counter);

file.close();

end = clock();

passed = double(end-start)/CLOCKS\_PER\_SEC;

cout<<"3-"<<counter<<endl;

cout<<"Czas: "<<passed<<"s"<<endl;

start = clock();

file.open("cztery\_male\_duze.txt");

counter=0;

generate("", list2, 52, 4, file, counter);

file.close();

end = clock();

passed =double(end-start)/CLOCKS\_PER\_SEC;

cout<<"4-"<<counter<<endl;

cout<<"Czas: "<<passed<<"s"<<endl;

start = clock();

file.open("piec\_male\_duze.txt");

counter=0;

generate("", list2, 52, 5, file, counter);

file.close();

end = clock();

passed =double(end-start)/CLOCKS\_PER\_SEC;

cout<<"5-"<<counter<<endl;

cout<<"Czas: "<<passed<<"s"<<endl;

start = clock();

file.open("szesc\_male\_duze.txt");

counter=0;

generate("", list2, 52, 6, file, counter);

file.close();

end = clock();

passed =double(end-start)/CLOCKS\_PER\_SEC;

cout<<"6-"<<counter<<endl;

cout<<"Czas: "<<passed<<endl;

cout<<"Wszystkie znaki"<<endl;

start = clock();

file.open("trzy\_wszystkie.txt");

generate("", list3, 95, 3, file, counter);

file.close();

end = clock();

passed = double(end-start)/CLOCKS\_PER\_SEC;

cout<<"3-"<<counter<<endl;

cout<<"Czas: "<<passed<<"s"<<endl;

start = clock();

file.open("cztery\_wszystkie.txt");

counter=0;

generate("", list3, 95, 4, file, counter);

file.close();

end = clock();

passed =double(end-start)/CLOCKS\_PER\_SEC;

cout<<"4-"<<counter<<endl;

cout<<"Czas: "<<passed<<"s"<<endl;

start = clock();

file.open("piec\_wszystkie.txt");

counter=0;

generate("", list3, 95, 5, file, counter);

file.close();

end = clock();

passed =double(end-start)/CLOCKS\_PER\_SEC;

cout<<"5-"<<counter<<endl;

cout<<"Czas: "<<passed<<"s"<<endl;

start = clock();

file.open("szesc\_wszystkie.txt");

counter=0;

generate("", list3, 26, 6, file, counter);

file.close();

end = clock();

passed =double(end-start)/CLOCKS\_PER\_SEC;

cout<<"6-"<<counter<<endl;

cout<<"Czas: "<<passed<<endl;

\*/

return 0;

}

**2. Generowanie haseł (PESELI)**

#include <iostream>

#include <fstream>

#include <string>

using namespace std;

bool even\_month(char x, char y)

{

string m\_s="";

m\_s+=x;

m\_s+=y;

int m=stoi(m\_s);

if(m==2 || 22) return false;

else if(m%2==0) return true;

else return false;

}

bool leap\_year(char x, char y)

{

int y1=x-48;

int y2=y-48;

int year=y1+y2;

if ((year % 4 == 0 && year % 100 != 0) || year % 400 == 0)

return true;

else return false;

}

char ctrSum(string pesel)

{

int a1 = (pesel[0] - '0');

int a2 = (pesel[1] - '0') \* 3;

int a3 = (pesel[2] - '0') \* 7;

int a4 = (pesel[3] - '0') \* 9;

int a5 = (pesel[4] - '0');

int a6 = (pesel[5] - '0') \* 3;

int a7 = (pesel[6] - '0') \* 7;

int a8 = (pesel[7] - '0') \* 9;

int a9 = (pesel[8] - '0');

int a10 = (pesel[9] - '0') \* 3;

int sum = a1 + a2 + a3 + a4 + a5 + a6 + a7 + a8 + a9 + a10;

sum = sum % 10;

if (sum == 0) {

return '0';

}

int ctr = 10 - sum;

ctr += '0';

return (char)ctr;

}

int main()

{

ofstream file("pesele.txt");

char numbers[10]= {'0','1','2','3','4','5','6','7','8','9'};

bool leap=false;

bool even=false;

string pesel="";

//01.01.2000-31.03.2022

for(int i=2;i>=0;i--){//rok

for(int j=9;j>=0;j--){//rok

if(i==2 && j > 2) continue;

leap = leap\_year(numbers[i], numbers[j]);

for(int k=3;k>=2;k--){//miesiac

for(int l=9;l>=0;l--){//miesiac

if(i==2 && j==2 && (l > 3 || k > 2)) continue;

if(k==3 && l > 2) continue;

if(k==2 && l == 0) continue;

even = even\_month(numbers[k], numbers[l]);

for(int m=3;m>=0 ;m--){//dzien

for(int n=9;n>=0;n--){//dzien

if(m==0 && n == 0) continue;

if(m==3 && n > 1) continue;

if(m==3 && n==1 && even) continue;

if(l==2 && k==2 && m==2 && n==9 && !leap) continue;

for(int o=9;o>=0;o--){

for(int p=9;p>=0;p--){

for(int q=9;q>=0;q--){

for(int r=9;r>=0;r--){

pesel += numbers[i];

pesel += numbers[j];

pesel += numbers[k];

pesel += numbers[l];

pesel += numbers[m];

pesel += numbers[n];

pesel += numbers[o];

pesel += numbers[p];

pesel += numbers[q];

pesel += numbers[r];

char ctr = ctrSum(pesel);

pesel+=ctr;

file<<pesel<<endl;

pesel = "";

}}}}}}}}}}

//01.01.1970-31.12.1999

for(int i=9;i>=0;i--){//rok

for(int j=9;j>=0;j--){//rok

leap = leap\_year(numbers[i], numbers[j]);

for(int k=1;k>=0;k--){//miesiac

for(int l=9;l>=0;l--){//miesiac

if(k==1 && l > 2) continue;

if(k==0 && l == 0) continue;

even = even\_month(numbers[k], numbers[l]);

for(int m=3;m>=0 ;m--){//dzien

for(int n=9;n>=0;n--){//dzien

if(m==0 && n == 0) continue;

if(m==3 && n > 1) continue;

if(m==3 && n==1 && even) continue;

if(l==2 && k==0 && m==2 && n==9 && !leap) continue;

for(int o=9;o>=0;o--){

for(int p=9;p>=0;p--){

for(int q=9;q>=0;q--){

for(int r=9;r>=0;r--){

pesel += numbers[i];

pesel += numbers[j];

pesel += numbers[k];

pesel += numbers[l];

pesel += numbers[m];

pesel += numbers[n];

pesel += numbers[o];

pesel += numbers[p];

pesel += numbers[q];

pesel += numbers[r];

char ctr = ctrSum(pesel);

pesel+=ctr;

file<<pesel<<endl;

pesel = "";

}}}}}}}}}}

file.close();

return 0;

}

**3. Generator (nie?)losowy**