1. Specificarea mini-limbajului de programare:

Mod de rezolvare: EBNF

program = header, program\_main ;

header = header\_item, ’;’ ;

header\_item = ‘#include <’,librarie, ’> ’ | ‘using namespace ’,namespace ;

librarie = ‘iostream’ | ‘cmath’ ;

namespace = ‘std’ ;

program\_main = ‘int’, ‘main()’, ‘ { ‘, lista\_instr, ‘ }’ ;

lista\_instr = instr, lista\_instr | instr ;

instr atribuire | instr\_if | instr\_while | instr\_intrare | instr\_iesire ;

atribuire = tip\_data, ID ‘ = ’ expr | tip\_data, ID ;

tip\_data = ‘int’ | ‘double’ | tip\_definit ;

tip\_definit = ‘struct’, nume\_tip, ‘ { ‘, tip\_data, ID, ‘ ;’, ‘ } ;’ ;

expr = expr, operatie, variabila | expr, operatie, numar | variabila | numar | variabila, operatie, numar | variabila, operatie, variabila ;

variabila = ID ;

ID = litera, { litera | numar} ;

litera = [a-zA-Z] ;

numar = 0 | [1-9][0-9]\*[.]\*[0-9]\* ;

operatie = ‘+’ |’-‘ | ‘\*’ | ‘/’ | ‘%’ | ‘!=’ | ‘==’ | ‘<=’ | ‘>=’ ;

instr\_intrare = ‘cin ’, ‘ >> ’, ID, ‘ ;’ ;

instr\_iesire = ‘cout ’, ‘ << ’, expr, ‘ ;’ ;

instr\_if = ‘if ’, ‘ ( ‘, expr, ‘ ) ’, atribuire | ‘ if ’, ‘ ( ‘, expr, ‘ ) ’, atribuire, ‘ else ’, atribuire ;

instr\_while = ‘ while ’, ‘ ( ‘, expr, ‘ ) ’, instr | ‘ while ’, ‘ ( ‘, expr, ‘ ) ’, ‘ { ‘, lista\_instr, ‘ } ’ ;

1. A. Calculeaza perimetrul si aria cercului de o raza data data:

#include<iostream>

using namespace std;

int main()

{

int raza;

cin >> raza;

double pi = 3.14;

cout << pi \* raza \* raza;

cout << 2 \* pi \* raza;

}

B. Determina cmmdc a 2 nr naturale

#include<iostream>

using namespace std;

int main()

{

int a;

int b;

int r;

int d;

cin >> a;

cin >> b;

while(b!=0)

{

r=a%b;

a=b;

b=r;

}

d=a;

cout << d;

}

C. calculeaza suma a n numere citite de la tastatura

#include<iostream>

using namespace std;

int main()

{

int n;

int x;

int suma = 0;

int cnt = 1;

cin >> n;

while(cnt <= n)

{

cin >> x;

suma = suma + x;

cnt = cnt + 1;

}

cout << suma;

}

1. A. Greseli in ambele:

#include<iostream>

using namespace std;

int main()

{

int 1raza;

cin >> raza

double pi = 3.14;

cout << pi \* raza \* raza;

cout << 2 \* pi \* raza;

}

B. Greseala doar in limbajul mare:

#include<iostream>

using namespace std;

int main()

{

int a, b;

int r;

int d;

cin >> a;

cin >> b;

while(b!=0)

{

r=a%b;

a=b;

b=r;

}

d=a;

cout << d;

return 0;

}