

ALGORITMIZACE

1.

Navrhněte algoritmus a nakreslete strukturogram pro výpis tohoto obrazce

A

```

A * * * * *
* A * * * *
* * A * * *
A A A A A A
* * * * A *
* * * * * A
* * * * * A

```

B

```

B + + B + +
+ B + B + +
+ + B B + +
+ + + B + +
+ + + B B +
+ + + B + B
+ + + B + +
+ + + B + +

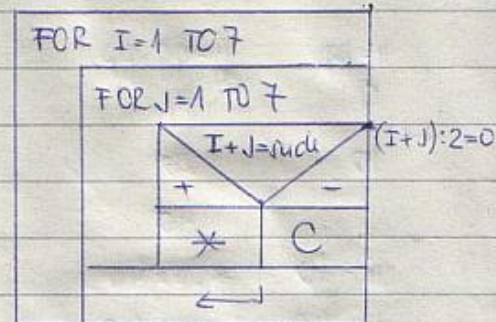
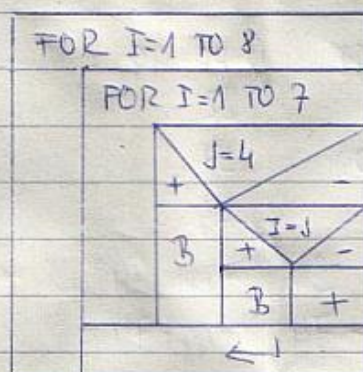
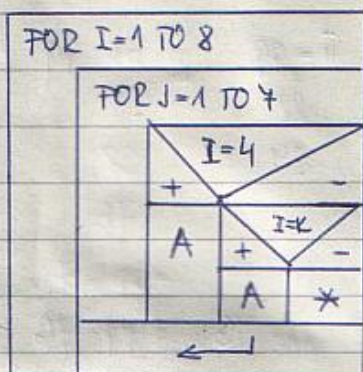
```

C

```

* C * C * C *
C * C * C * C
* C * C * C *
C * C * C * C
* C * C * C *
C * C * C * C
* C * C * C *

```



2.

Co se vypíše?

A

```

AA = TRUE
while AA == TRUE
  AA = NOT AA
  vypis: KONIK
  BB = NOT AA

```

AA 1
AA 0
KONIK
BB 1
KONEC

1x KONIK

B

```

BB = FALSE
AA = BB
vypis: KRUTA
BB = NOT BB
pokud AA == FALSE

```

BB 0
AA 0 - AA 1
KRUTA KRUTA
BB 1 - BB 0
KONEC

2x KRUTA

C

```

AA = TRUE
BB = AA
pokud BB == TRUE
  BB = NOT BB
  vypis: OPICE

```

AA 1
BB 1
BB 0
OPICE
KONEC

1x OPICE

3.

Jake bude ii, jj, *pp
a *qq po provedeni:

A

```
int main(void)
{ int ii, jj, *pp, *qq;
  ii = 9;
  jj = 14;
  pp = &ii;
  qq = &jj;
  *pp = ii + 1;
  *qq = *qq + 6;
  pp = qq;
  *qq = *pp + jj;
```

~~ii = 9~~ ~~jj = 14~~
9 14
10 20
 40

ii = 10 *pp = 40
jj = 40 *qq = 40

B

```
int main(void)
{ int ii, jj, *pp, *qq;
  pp = &jj;
  qq = &ii;
  ii = 4;
  jj = 22;
  *qq = *qq + 26;
  *pp = ii + 7;
  qq = pp;
  *qq = *pp + jj;
```

~~ii = 4~~ ~~jj = 22~~
4 22
30 34
 44

ii = 30 *pp = 44
jj = 74 *qq = 74

C

```
int main(void)
{ int ii, jj, *qq, *pp;
  ii = 22;
  jj = 31;
  qq = &ii;
  pp = &jj;
  *qq = ii + 2;
  *pp = *pp + 7;
  qq = pp;
  *pp = *qq + jj;
```

~~ii = 22~~ ~~jj = 31~~
22 31
24 38
 76

ii = 24 *pp = 76
jj = 76 *qq = 76

4.

Co se vypise?

A

```
for I = 1 to 6
  for J = 1 to I
    vypis: 0
  for J = 1 to (8-I)
    vypis: A
  nova_radka()
```

0 A A A A A A A
0 0 A A A A A A
0 0 0 A A A A A
0 0 0 0 A A A A
0 0 0 0 0 A A A
0 0 0 0 0 0 A A

B

```
for(J=2; J<7; J=J+1)
  for(K=1; K<4; K++)
    vypis: A
  for(K=1; K<8-J; K++)
    vypis: *
  nova_radka()
```

A A A * * * * *
A A A * * * *
A A A * * *
A A A * *
A A A *
A A A *

C

```
for(K=2; K<8; K=K+1)
  for(L=2; L<4; L++)
    vypis: X
  for(L=1; L<8-K; L++)
    vypis: 0
  nova_radka()
```

X X 0 0 0 0 0
X X 0 0 0 0
X X 0 0 0
X X 0 0
X X 0
X X

5.

Stanovte prikaz / prikazy, ktoré je nutno doplnit do miesta P, aby vznikl požadovaný výpis. Prikazy smiete vkladať len do miesta P, nikam jinať!

A

```

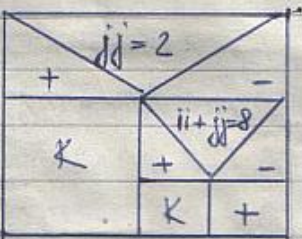
for ii = 1 to 7
  for jj = 1 to 8
    P
  nova_radka()

```

```

+ k + + + + k +
+ k + + + + k +
+ k + + k + + +
+ k + k + + + +
+ k k + + + + +
+ k + + + + + +
k k + + + + + +

```



B

```

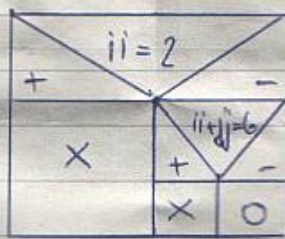
for ii = 1 to 6
  for jj = 1 to 8
    P
  nova_radka()

```

```

o o o o x o o o
x x x x x x x x
o o x o o o o o
o x o o o o o o
x o o o o o o o
o o o o o o o o

```



C

```

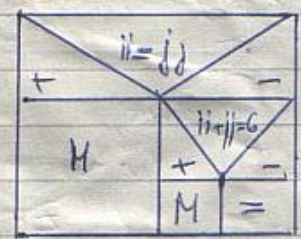
for ii = 1 to 7
  for jj = 1 to 7
    P
  nova_radka()

```

```

M = = = M = =
= M = M = = =
= = M = = = =
= M = M = = =
M = = = M = =
= = = = M = =
= = = = = M

```



6.

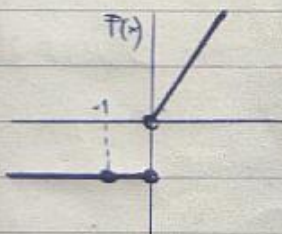
Nakreslete graf funkcie $H(x)$ dane strukturogramom

A

```

x = -1 ?
+ | -
x <= 0 ?
+ | -
F=-1 | F=-1 | F=2*x

```

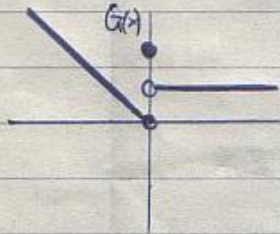


B

```

x = 0 ?
- | +
x > 0 ?
- | +
G=-1*x | G=1 | G=2

```

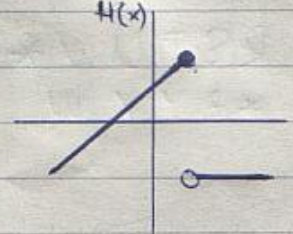


C

```

x < 1 ?
- | +
x = 1 ?
- | +
H=-2 | H=+2*x | H=x+1

```



7.

Jaky bude vypis na konci MAIN ?
Funkci podprogramu vysvetlete !

A hlavní program MAIN

call FELIX
podprogram FELIX
XX = ctiznak()
XX == '*' ?
+ -
XX=ctiznak()
XX=ctiznak() call FELIX
vypisznak(xx);

nacitane znaky: RSTUV*WXYZ*1234

C hlavní program MAIN

call HANUS
podprogram HANUS
XX = ctiznak()
XX == '*' ?
+ -
XX=ctiznak() call HANUS
XX = ctiznak()
vypisznak(xx);

nacitane znaky: RSTU*VWXYZ*1234

~~XS~~~~XU~~~~X*~~~~XX~~~~XZ~~~~X1~~

VÝPIS:

12X*US

RSTU*V

1*ZYXW

VÝPIS:

WXYZ*1

B hlavní program MAIN

call FERDA
podprogram FERDA
XX = ctiznak()
XX == '*' ?
+ -
XX=ctiznak() call FERDA
XX=ctiznak()
vypisznak(xx);

nacitane znaky: RSTUV*WXYZ*1234

RSTUV*

*ZYXW

VÝPIS:

WXYZ*

8.

Co se vypise?

A

kk = 1
mm = 1
kk <= 24
mm = mm + 2
vypis: ADOLF
kk = kk + 2
mm < 14
vypis: LENKA

B

kk = 1
rr = 1
kk <= 25
rr = rr + 3
vypis: ALOIS
kk = kk + 2
rr < 15
vypis: LEONA

C

rr = 2
ss = 1
rr <= 25
ss = ss + 2
vypis: ANTON
rr = rr + 2
ss < 15
vypis: LINDA

K1, M1, M3, (A), K3, M5, (A),
 K5, M7, (A), K7, M9, (A), K9,
 M11, (A), K11, M13, (A), K13,
 M15, (A), K15, (L), M17, (A), K17, (L)
 M19, (A), K19, (L), M21, (A), K21, (L)
 M23, (A), K23, (L), M25, (A), K25,
 (L) konec
 6x (A) + 6x (AL)

K1, R1, R4, (A), K3, R7, (A),
 K5, R10, (A), K7, R13, (A), K9,
 R16, (A), K11, (L), R19, (A), K13,
 (L), R22, (A), K15, (L), R25,
 (A), K17, (L), R28, (A), K19, (L),
 R31, (A), K21, (L), R34, (A),
 K23, (L), R37, (A), K25, (L),
 R40, (A), K27, (L), konec
 4x (A) + 9x (AL)

R2, S1, S3, (A), R4, S5, (A),
 R6, S7, (A), R8, S9, (A), R10,
 S11, (A), R12, S13, (A), R14,
 S15, (A), R16, (L), S17, (A),
 R18, (L), S19, (A), R20, (L),
 S21, (A), R22, (L), S23, (A),
 R24, (L), S25, (A), R26, (L),
 konec
 6x (A) + 6x (AL)

9.

Delaji programy totez? vysvetlete!

A

ii = 1
ii < 3
A[ii] = ctiznak()
ii = ii + 1

kk = 1
kk < 3
kk = kk + 1
A[kk] = ctiznak()

NE

A[1] A[2]
 A[2] A[3]

B

ii = 1
ii < 3
B[ii] = ctiznak()
ii = ii + 1

kk = 0
kk < 2
kk = kk + 1
B[kk] = ctiznak()

ANO

B[1] B[1]
 B[2] B[2]

C

jj = 3
jj < 4
C[jj] = ctiznak()
jj = jj + 1

kk = 3
kk < 4
kk = kk + 1
C[kk] = ctiznak()

NE

C[3] C[4]
~~C[1]~~ ~~C[2]~~