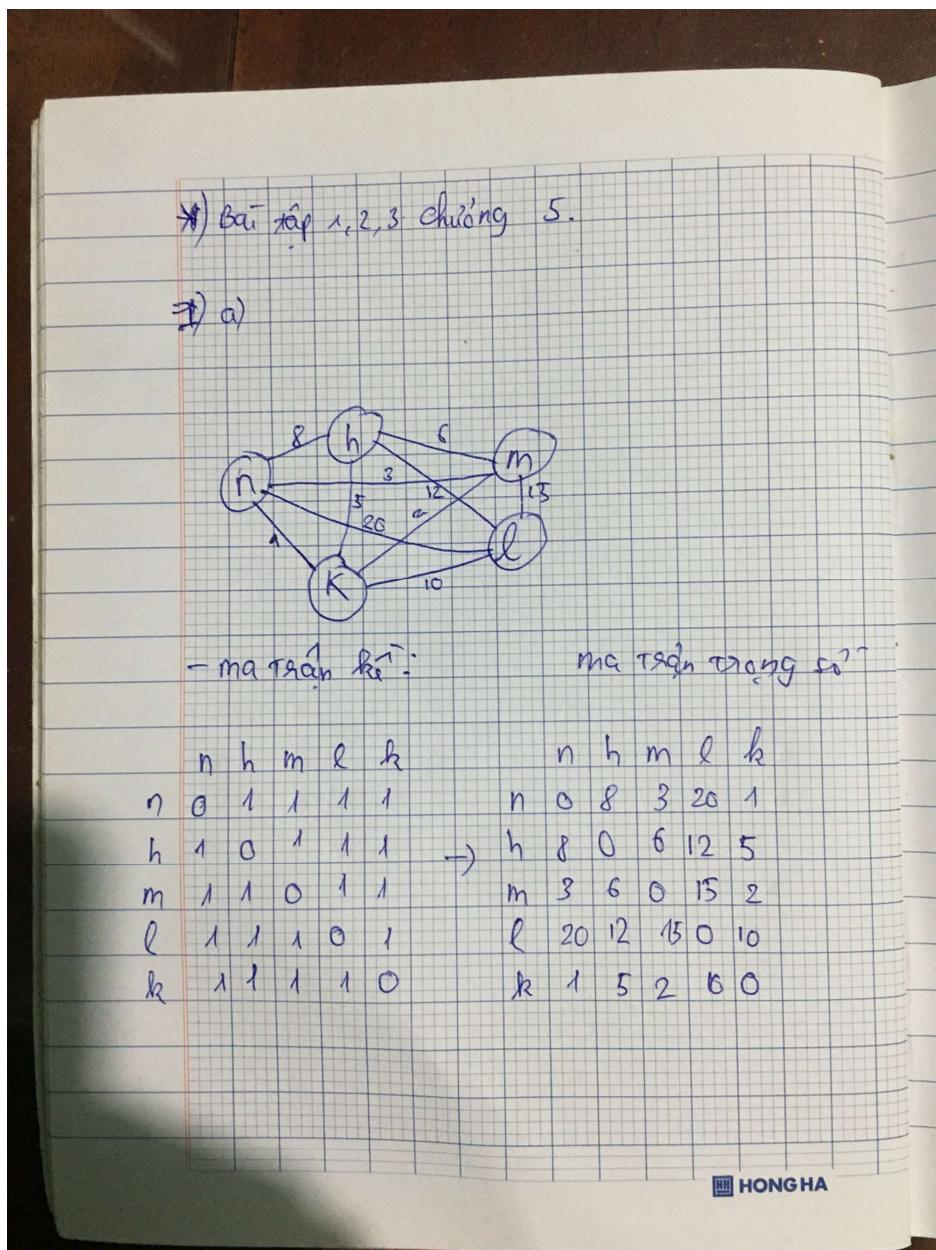


Họ và tên : Đặng Quốc Nhã

Mã sinh viên : 20it966

- Bài tập chương 5 : Đồ thị

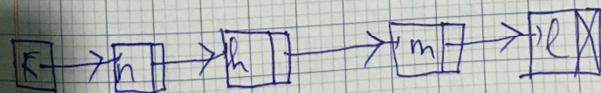
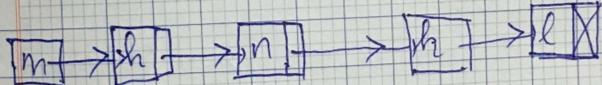
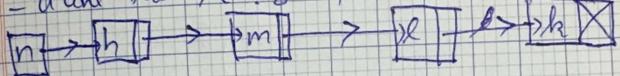
- Bài 1



- danh sách canh

n h	h n	m h	l h	k h
n m	h m	m n	l n	k n
n l	h l	m l	l m	k l
n k	h k	m k	l k	k m

- danh sách các bước để đổi chỗ hai số



b) - tập dượt bài

$$+ T(n) = \{h, l, m, n\}$$

$$+ T(k) = \{m, l, h, n\}$$

$$+T(m) = \{l, h, n, k\}$$

$$+T(l) = \{k, n, h, m\}$$

$$++(k) = \{n, h, m, l\}$$

- bao minh otic'

$$+ \deg(n) = 4, \deg(k) = 4; \deg(l) = 4$$

$$\deg(m) = 4$$

c) +) duong di:

$$h \rightarrow m \rightarrow l \rightarrow n \rightarrow k; \text{ do dai } 4$$

$$h \rightarrow h \rightarrow m \rightarrow l \rightarrow k; \text{ do dai } 4$$

$$m \rightarrow l \rightarrow k \rightarrow n \rightarrow h \text{ do dai } 4$$

$$l \rightarrow m \rightarrow h \rightarrow n \rightarrow k \text{ do dai } 4$$

$$h \rightarrow n \rightarrow l \rightarrow m \rightarrow k \text{ do dai } 4$$

+/ chay truon

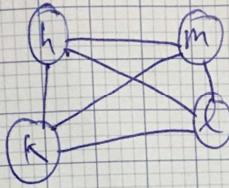
$$n \rightarrow h \rightarrow m \rightarrow k \rightarrow l \rightarrow h \rightarrow n; \text{ do dai } 6.$$

$$n \rightarrow h \rightarrow k \rightarrow n; \text{ do dai } 3$$

$$l \rightarrow m \rightarrow k \rightarrow h \rightarrow m; \text{ do dai } 4$$

+) đồ thị con

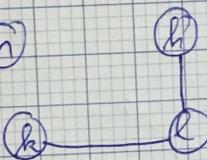
- G1:



$$V = \{h, m, l, k\}$$

$$E = \{(k, h), (h, m), (h, l), (m, l)\}$$

- G2:



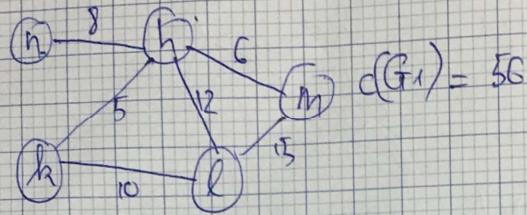
$$V = \{n, l, k, h\}$$

$$E = \{(h, k), (k, l)\}$$

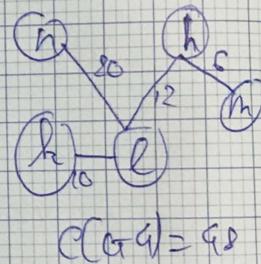
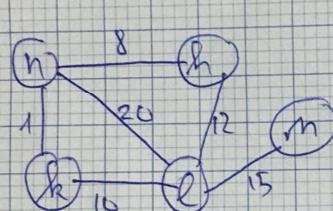
+) G là đồ thị bùn thông. Hamilton

④ d) - G có chung元旦 G

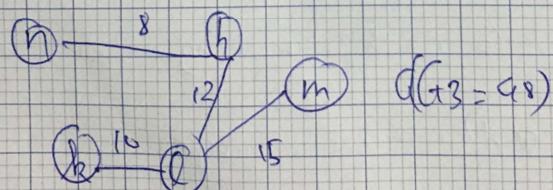
+ )  $G_1$ :



+ )  $G_2$   $c(G_2) = 56$  +  $G_4$



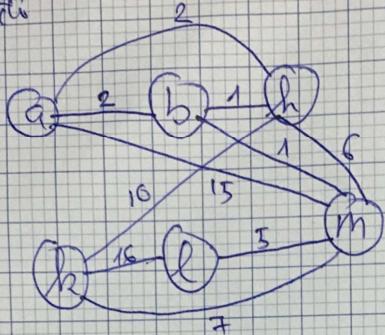
+ )  $G_3$



HONGHA

- Bài 2

2) G)  
- Sát

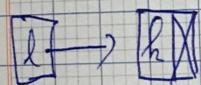
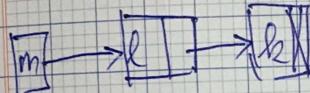
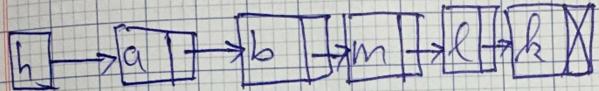
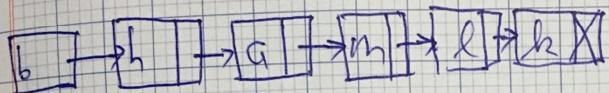


	a	b	c	d	e	f	g	a	b	c	d	e	f	g
a	0	1	1	1	0	0	0	0	2	2	15	0	0	0
b	1	0	1	1	0	0	0	2	0	1	1	0	0	0
c	1	1	0	1	0	1	1	2	1	0	6	0	10	0
d	1	1	1	0	1	1	1	15	1	0	0	5	7	0
e	0	0	0	1	0	1	1	0	0	0	5	0	16	0
f	0	0	1	1	1	0	0	0	0	10	4	6	0	0

- danh sách các:

a b b h h m m l m l h l  
a h b m h l m l  
a m

-dishti



-tip tip hui

$$\tau(a) = (b, h, m) ; \tau(b) = (a; h, m)$$

$$\tau(h) = (a; b; m, l) \quad \tau(m) = (a, b, h, l, k)$$

$$\tau(l) = (m; k) \quad \tau(k) = (l, m, h)$$

$$-ba, m: a: i \emptyset, \deg(a) = 3; \deg(b) = 3$$

HONG HA

$$\deg(\alpha) = 4 \quad \deg(\beta) = 5 \quad \deg(\gamma) = 2$$

$$\deg(\tau) = 3.$$

- đường đi:

$$a \rightarrow b \rightarrow h \rightarrow m \rightarrow l \rightarrow h : \text{độ dài } 5$$

$$b \rightarrow h \rightarrow m \rightarrow l \rightarrow h : 4$$

$$h \rightarrow a \rightarrow b \rightarrow m \rightarrow l \rightarrow h : 5$$

$$m \rightarrow l \rightarrow h : 2$$

$$l \rightarrow h : 1$$

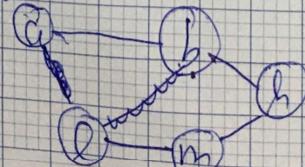
- chu trình:

$$h \rightarrow m \rightarrow l \rightarrow k \rightarrow h : 4$$

$$b \rightarrow m \rightarrow a \rightarrow b : 3$$

$$h \rightarrow m \rightarrow a \rightarrow b \rightarrow h : 4$$

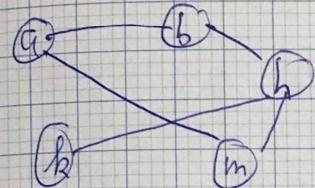
- đồ thị con:



HONG HA

$$V = \{a, b, h, m, l\}$$

$$E = \{(a, b), (b, h), (h, m), (l, m)\}$$



$$V = \{a, b, h, m, l\}$$

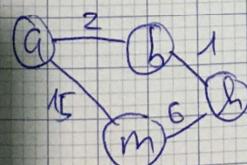
$$E = \{(a, b), (a, m), (b, h), (h, m)\}$$

$$(h, l), (h, m)\}$$

- Giai đố thi Euler

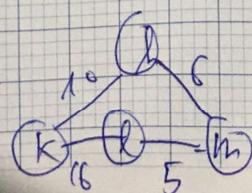
① - Giai khung

+ G1)



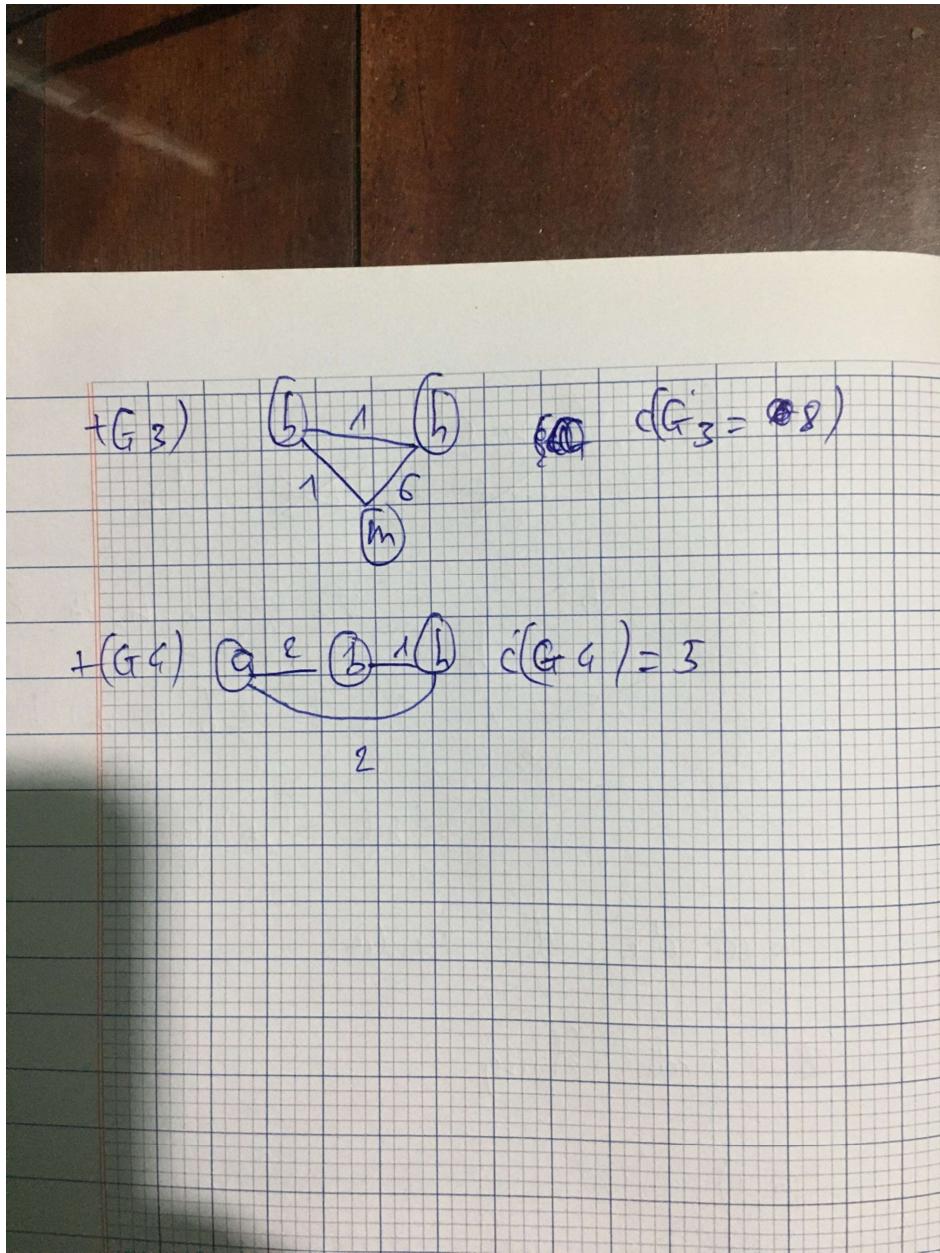
$$c(G_1) = 29$$

+ G2:



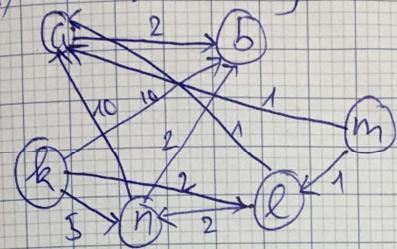
$$c(G_2) = 37$$

HONG HA



- Bài 3

3) đồ thị có hướng



a	b	m	l	n	k	a	b	m	l	n	k
0	1	0	0	0	0	0	0	2	0	0	0
1	0	0	0	0	0	0	0	0	0	0	0
m	1	0	0	1	0	0	1	0	0	1	0
l	1	0	0	0	1	0	1	0	0	0	2
n	1	1	0	0	0	0	1	0	2	0	0
k	0	1	0	1	1	0	K	0	1	0	2

- discount

a b : 2	l, g : 1
m a : 1	l, h : 2
m l : 1	h, l : 2
0 a : 10	k n 5
n b : 2	K b : 10

- dls kè: sôds lùn k<sub>d</sub>sh

$$\boxed{a} \rightarrow \boxed{b} \boxed{2} \times$$

$$\boxed{b} \rightarrow \times$$

$$\boxed{m} \rightarrow \boxed{a} \boxed{1} \rightarrow \boxed{e} \boxed{1} \times$$

$$\boxed{r} \rightarrow \boxed{n} \boxed{2} \rightarrow \boxed{a} \boxed{1} \times$$

$$\boxed{n} \rightarrow \boxed{a} \boxed{1} \rightarrow \boxed{b} \boxed{2} \times$$

$$\boxed{h} \rightarrow \boxed{b} \boxed{1} \rightarrow \boxed{e} \boxed{2} \rightarrow \boxed{n} \boxed{5} \times$$

- dñs kè

$$T(a) = \{b\} \quad T^{\bullet}(a) = \{m; e; n\}$$

$$T^+(b) = \{\emptyset\} \quad T^-(b) = \{a; b; n\}$$

$$T^+(m) = \{a; e\} \quad T^-(m) = \{\emptyset\}$$

$$T^+(e) = \{a; n\} \quad T^-(e) = \{m; b\}$$

$$T^+(n) = \{a; b\} \quad T^-(n) = \{k; l\}$$

$$T^+(k) = \{a; l; n\} \quad T^-(k) = \{\phi\}$$

$$\text{deg } +(\alpha) = 1 \quad \text{deg } -(\alpha) = 3$$

$$\text{deg } +(\beta) = 0 \quad \text{deg } -(\beta) = 3$$

$$\text{deg } +(\eta) = 2 \quad \text{deg } -(\eta) = 0$$

$$\text{deg } +(e) = 2 \quad \text{deg } -(e) = 2$$

$$\text{deg } +(n) = 2 \quad \text{deg } -(n) = 2$$

$$\text{deg } +(k) = 3 \quad \text{deg } -(k) = 0$$

-1 during dr

$$+1 \quad k \rightarrow l \rightarrow a \rightarrow b : 3$$

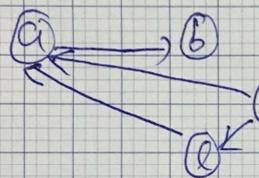
$$+) n \rightarrow a \rightarrow b \rightarrow 2$$

$$+) m \rightarrow a \rightarrow b : 2$$

$$+) k \rightarrow l \rightarrow n \rightarrow a \rightarrow b : 9.$$

$\therefore$  2 đồ thị con

$$V = (a, b, m, l)$$



$$E = ((a, b), (m, l), (m, a), (l, a))$$

$$a \rightarrow b$$

$$b \rightarrow m$$

$$b \rightarrow l$$

$$m \rightarrow l$$

$$V = (a, b, l, m, k)$$

$$E = ((k, n), (k, l), (k, b), (a, l))$$

$\rightarrow$  G là đồ thị bùn không yếu.

$\rightarrow$  G không phải là đồ thị Euler và cũng

không Hamilton

$\rightarrow$  G không có chu trình.

- Thuật toán đồ thị  
Tính các đỉnh

D:\hoctap\tinhcacdinh.c - Dev-C++ 5.11

File Edit Search View Project Execute Tools AStyle Window Help

Project Classes Debug cacdinh.cpp [ ] tinhcacdinh.c [ ] matranke.c

```

22 struct Graph* create_graph(int vertices) {
23     int i;
24     struct Graph* graph = malloc(sizeof(struct Graph));
25     graph->numVertices = vertices;
26     graph->adjLists = malloc(vertices * sizeof(struct node*));
27     for(i = 0; i < vertices; i++)
28         graph->adjLists[i] = NULL;
29
30     return graph;
31 }
32
33 void add_edge(struct Graph* graph, int s, int d) {
34     struct node* new_node = create_node(d);
35     new_node->next = graph->adjLists[s];
36     graph->adjLists[s] = new_node;
37     new_node = create_node(s);
38     new_node->next = graph->adjLists[d];
39     graph->adjLists[d] = new_node;
40 }
41
42 void print(struct Graph* graph) {
43     int v;
44     for (v = 2; v < graph->numVertices; v++) {
45         struct node* temp = graph->adjLists[v];
46         printf("V%d: ", v);
47         while (temp) {
48             printf("%d -> ", temp->vertex);
49             temp = temp->next;
50         }
51         printf("\n");
52     }
53 }
54
55

```

Compiler Resources Compile Log Debug Find Results Close

Compilation results...

-----

- Errors: 0
- Warnings: 0
- Output Filename: D:\hoctap\matranke.exe
- Output Size: 129.15625 Kib
- Compilation Time: 0.31s

Line: 22 Col: 17 Sel: 0 Lines: 63 Length: 1422 Insert Done parsing in 0.016 seconds

D:\hoctap\tinhcacdinh.c - [Executing] - Dev-C++ 5.11

File Edit Search View Project Execute Tools AStyle Window Help

Project Classes Debug cacdinh.cpp tinhcacdinh.c [ ] matranke.c

D:\hoctap\tinhcacdinh.exe

```

dinh 2
: 5 -> 4 -> 3 ->

dinh 3
: 4 -> 2 ->

dinh 4
: 3 -> 2 ->

dinh 5
: 2 ->


```

-----

Process exited after 0.04328 seconds with return value 0

Press any key to continue . . .

Compiler Resources Abort Compilation

Compilation results...

-----

- Errors: 0
- Warnings: 0
- Output Filename: D:\hoctap\tinhcacdinh.exe
- Output Size: 129.1982421875 Kib
- Compilation Time: 0.34s

Line: 46 Col: 17 Sel: 0 Lines: 63 Length: 1423 Insert Done parsing in 0 seconds

Tính ma trận

D:\hoctap\matranke.c - Dev-C++ 5.11

File Edit Search View Project Execute Tools AStyle Window Help

TDM-GCC 4.9.2 64-bit Release

Project Classes Debug cacdinh.cpp tinhcacnh.c [ ] matranke.c

```

4 void init(int arr[V][V]) {
5     int i,j;
6     for ( i = 0; i < V; i++)
7         for ( j = 0; j < V; j++)
8             arr[i][j] = 0;
9 }
10
11 void add_edge(int arr[V][V], int i, int j) {
12     arr[i][j] = 1;
13     arr[j][i] = 1;
14 }
15
16 void print(int arr[V][V]) {
17     int i,j;
18     for ( i = 0; i < V; i++) {
19         printf("%d: ", i);
20         for ( j = 0; j < V; j++) {
21             printf("%d ", arr[i][j]);
22         }
23         printf("\n");
24     }
25 }
26
27 int main() {
28     int matrix[V][V];
29     init(matrix);
30     add_edge(matrix, 2, 3);
31     add_edge(matrix, 2, 4);
32     add_edge(matrix, 3, 4);
33     add_edge(matrix, 4, 2);
34     add_edge(matrix, 4, 5);
35     print(matrix);
36     return 0;
37 }
```

Compiler Resources Compile Log Find Results Close

Compilation results...

- Errors: 0  
- Warnings: 0  
- Output Filename: D:\hoctap\tinhcacnh.exe  
- Output Size: 129.1982421875 KiB  
- Compilation Time: 0.34s

Line: 25 Col: 2 Sel: 0 Lines: 36 Length: 656 Insert Done parsing in 0 seconds

79°F Rain ENG 11:34 PM 10/25/2021

D:\hoctap\matranke.c - [Executing] - Dev-C++ 5.11

File Edit Search View Project Execute Tools AStyle Window Help

TDM-GCC 4.9.2 64-bit Release

Project Classes Debug cacdinh.cpp tinhcacnh.c [ ] matranke.c

```

4 void init(int arr[V][V]) {
5     int i,j;
6     for ( i = 0; i < V; i++)
7         for ( j = 0; j < V; j++)
8             arr[i][j] = 0;
9
10 D:\hoctap\matranke.exe
11: 0 0 0 0 0 0
12: 0 0 0 0 1 0
13: 0 0 1 0 0 0
14: 0 0 1 1 0 1
15: 0 0 0 0 1 0
16:
17-----
```

18Process exited after 0.04758 seconds with return value 0  
19Press any key to continue . . .

20  
21  
22  
23  
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31  
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35  
36

Compiler Resources Abort Compilation

Compilation results...

- Errors: 0  
- Warnings: 0  
- Output Filename: D:\hoctap\matranke.exe  
- Output Size: 129.15625 KiB  
- Compilation Time: 0.33s

Line: 25 Col: 2 Sel: 0 Lines: 36 Length: 656 Insert Done parsing in 0 seconds

79°F Rain ENG 11:34 PM 10/25/2021