

Διάλεξη 7 - Επίλυση Προβλημάτων

Εθνικό και Καποδιστριακό Πανεπιστήμιο Αθηνών

Εισαγωγή στον Προγραμματισμό

Θανάσης Αυγερινός / Τάκης Σταματόπουλος

Amazon says AWS cloud service back to normal after outage disrupts businesses worldwide

By Greg Bensinger, Shubham Kalia and Deborah Mary Sophia

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ROOT CAUSE IS NETWORK HEALTH MONITOR

Earlier, AWS said the root cause of the outage was an underlying subsystem that monitors the health of its network load balancers used to distribute traffic across several servers.

The issue, AWS said, originated from within the "EC2 internal network", Amazon's "Elastic Compute Cloud" service, which provides on-demand cloud capacity within AWS.

Shortly after 3 p.m. PT (2200 GMT), Amazon said, "all AWS services returned to normal operations. Some services such as AWS Config, Redshift, and Connect continue to have a backlog of messages that they will finish processing over the next few hours."

Ken Birman, a computer science professor at Cornell University, said software developers need to build better fault tolerance. He said AWS provides tools developers can use to protect themselves in the event of a problem at one of any of its sprawling network of data centers, and developers can also create backups with other cloud providers.











Ανακοινώσεις / Διευκρινίσεις

GRCPC 2023

Rank	Id	University	Name	Total	Penalty	Time	A tries	A penalty	B tries	B penalty	C tries	C penalty	D tries	D penalty	E tries	E penalty	F tries	F penalty	G tries	G penalty	H tries	H penalty
1	3023	NTUA	TwoOutOfThree	8	983	207	1	76	9	207	1	30	1	90	1	63	1	88	1	119	1	150
2	3002	NTUA	GeeksForGreeks	8	1071	185	1	89	5	67	1	100	1	77	1	162	1	157	1	174	1	185
3	3008	NTUA	CyRockets	8	1333	252	3	157	2	66	1	75	3	127	1	70	2	72	16	252	1	94
4	1037	UoC	QueueUnderflow	8	1795	230	8	196	2	137	1	147	4	230	1	145	3	203	3	187	2	230
5	3018	NTUA	AC/DC	7	1096	237	2	56	1	237	1	144	0	0	2	139	1	157	3	198	1	85
6	3013	UniPI	404 - Creative Name Not Found	7	1134	236	5	97	3	236	1	31	1	203	1	131	1	121	2	175	1	0
7	2020	AUTH	Alcoholic Conjectures	7	1452	251	12	251	1	56	1	71	1	246	3	108	3	137	8	223	5	0
8	3003	NTUA	Players.apk	7	1735	257	3	196	31	257	5	208	1	100	2	133	4	63	0	0	1	178
9	1012	uPatras	Chatgpt Enjoys	6	749	153	4	140	2	97	1	153	0	0	1	133	1	89	5	0	1	57
10	1029	uPatras	The Hobbistas	5	713	261	2	45	3	0	1	72	0	0	2	123	1	172	0	0	1	261
11	1031	uPatras	copypasta	5	721	201	2	72	3	145	1	46	2	201	0	0	2	157	0	0	0	0
12	3024	NTUA	Garbage Collectors	5	781	218	2	116	4	76	1	101	4	0	0	0	1	190	0	0	1	218
13	2008	AUTH	Conda	4	623	208	1	153	8	0	2	65	7	208	0	0	2	57	0	0	0	0
14	1006	UOI	Euler	4	694	248	11	0	1	92	2	118	1	248	0	0	2	196	0	0	12	0
15	3007	NTUA	ExperiencedAmateurs	4	852	260	10	260	1	105	1	113	8	0	6	0	1	194	0	0	0	0
16	2015	AUTH	TBD	4	939	254	0	0	1	208	2	239	1	254	0	0	6	118	0	0	3	0
17	2017	AUTH	IMPOSTORES	4	976	219	9	158	0	0	1	171	0	0	5	208	1	219	0	0	0	0
18	2021	AUTH	Brogrammers	4	981	251	6	188	0	0	4	115	0	0	2	251	2	227	0	0	0	0
19	2005	AUTH	Bozoneers	3	332	143	7	0	8	0	3	143	0	0	1	116	1	33	0	0	0	0
20	2016	AUTH	name=/dev/null	3	337	127	0	0	1	50	2	80	0	0	0	0	4	127	3	0	0	0
21	2006	AUTH	AlgoManiacs	3	395	129	10	0	4	0	1	80	4	129	4	0	1	126	0	0	0	0
22	2014	UoM	Open Source UoM 1	3	433	172	5	37	7	0	1	104	8	0	0	0	3	172	0	0	0	0
23	3020	NTUA	NotFound	3	560	241	1	0	4	0	1	109	0	0	1	210	1	241	0	0	0	0
24	1001	uPatras	Competitive-Geeks	3	645	197	2	0	0	0	3	100	3	0	0	0	8	168	0	0	1	197
25	3021	NTUA	Nemo	3	660	255	5	255	0	0	3	76	3	209	6	0	0	0	0	0	0	0
26	1028	uPatras	KNGGTR	3	716	186	1	0	6	0	9	186	0	0	1	162	3	168	0	0	0	0
27	3004	UNIWA	Platos' Rave	3	800	262	5	250	0	0	2	68	0	0	3	0	9	262	0	0	0	0
28	2010	UoM	TheBits	3	871	262	0	0	0	0	9	236	0	0	5	262	3	93	0	0	0	0
29	2023	AUTH	Imagine Dragons	2	279	155	11	0	7	0	1	155	0	0	0	0	1	124	0	0	0	0
30	3017	NTUA	<pzhelpus>	2	285	175	10	0	0	0	3	50	0	0	0	0	6	175	0	0	0	0
31	2025	AUTH	AverageBugEnjoys	2	320	259	0	0	0	0	1	61	0	0	0	0	1	259	0	0	0	0
32	1009	UOI	404-team-not-found	2	339	224	1	115	1	0	1	224	0	0	0	0	0	0	0	0	0	0
33	1005	uPatras	Take a byte	2	385	232	3	0	2	232	0	0	1	133	0	0	0	0	0	0	0	0
34	1030	uPatras	Codeorevithoulides	2	404	233	5	0	10	0	1	131	0	0	2	0	3	233	0	0	0	0
35	3015	NTUA	AlgoSoft	2	411	250	1	161	0	0	1	250	0	0	0	0	0	0	0	0	0	0
36	1036	uPatras	teapot418	2	441	227	3	134	0	0	6	0	0	0	2	0	3	227	0	0	0	0
37	1035	TUC	RHTRA_9	2	526	242	0	0	5	204	0	0	0	0	0	0	0	0	0	1	242	
38	2009	UoM	WiseTurtles	2	804	247	16	177	0	0	8	0	0	0	0	0	6	247	0	0	0	0
39	1020	uPatras	OnCAFERARA	1	137	137	5	0	0	0	2	0	0	0	0	0	1	137	0	0	0	0

Ανακοινώσεις / Διευκρινίσεις

GRCPC 2024

RANK	TEAM	SCORE	A	B	C	D	E	F	G	H
1	 The ICPC Greece Regional Competition Should I Stay or Should I Code National Technical University of Athens	8 1196	113 1 try	64 1 try	211 4 tries	174 3 tries	127 1 try	70 1 try	160 2 tries	137 2 tries
2	 GeeksforGreeks National Technical University of Athens	8 1329	151 2 tries	80 3 tries	237 6 tries	188 1 try	123 1 try	78 4 tries	62 3 tries	110 3 tries
3	 CyPros National Technical University of Athens	7 909	86 1 try	35 3 tries	203 2 tries	107 2 tries	152 1 try	111 4 tries	55 2 tries	
4	 HUAdrtaticComplexity Harokopio University of Athens	5 573	112 4 tries	47 1 try		59 2 tries	81 1 try	174 2 tries	7 tries	
5	 SleepIsOverrated University of Piraeus	5 927	238 4 tries	108 3 tries		105 1 try		171 6 tries	45 4 tries	
6	 AC/DC National Technical University of Athens	4 361		32 3 tries	4 tries	5 tries	70 1 try	199 1 try	20 1 try	
7	 0x8BADF00D National and Kapodistrian University of Athens	4 393		99 1 try	187 1 try	5 tries		81 1 try	26 1 try	
8	 GetElementPtr National Technical University of Athens	4 751	205 1 try	155 1 try			3 tries	146 10 tries	45 2 tries	
9	 Acoustics National Technical University of Athens	3 440	184 2 tries	107 5 tries		29 2 tries		15 tries		
10	 Killswitch Aristotle University of Thessaloniki	3 524		52 2 tries	138 5 tries		6 tries	194 3 tries	4 tries	

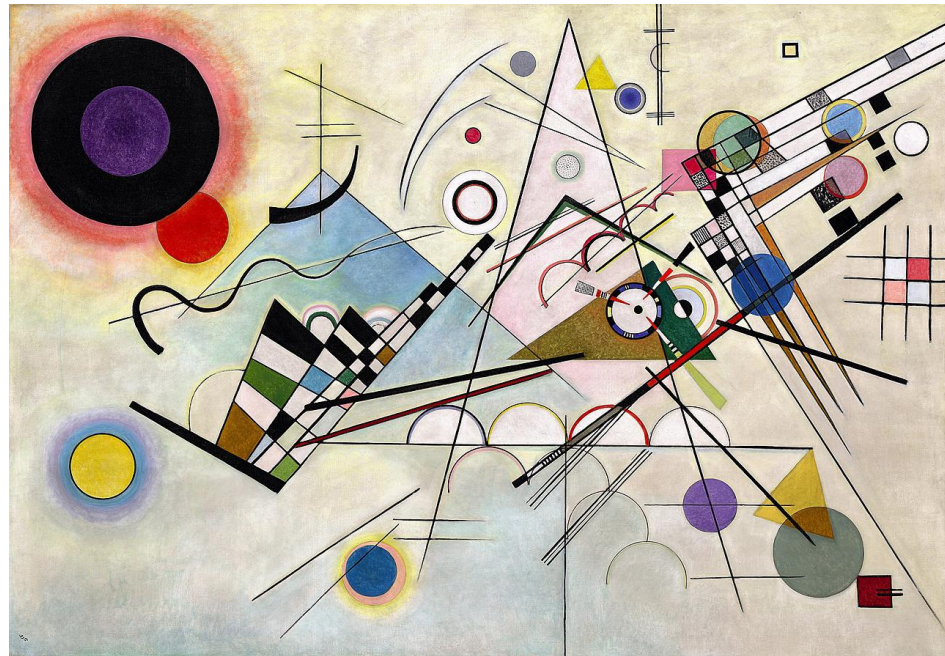
Ανακοινώσεις / Διευκρινίσεις

GRCPC 2025

Team & University	Solved	Penalty	Medal
CodeBlooded <i>National Technical University of Athens</i>	6	377	Gold Medal
GeeksforGreeks <i>National Technical University of Athens</i>	6	583	Gold Medal
The Ancient Missiles <i>National and Kapodistrian University of Athens</i>	6	838	Gold Medal
DiTide and Conquer <i>National and Kapodistrian University of Athens</i>	5	110	Silver Medal
HUAdratic Complexity <i>Harokopio University of Athens</i>	5	437	Silver Medal
PAPAP <i>National Technical University of Athens</i>	5	442	Silver Medal
Underclocked <i>National Technical University of Athens</i>	5	486	Bronze Medal
UniWarriors <i>University of West Attica</i>	5	755	Bronze Medal
Bitwise Wizards <i>Aristotle University of Thessaloniki</i>	4	139	Bronze Medal
The Overloads <i>National Technical University of Athens</i>	4	329	Ranked

Την Προηγούμενη Φορά

- Εντολές συνέχεια
- Ροή Ελέγχου
- Παραδείγματα Εντολών & Προβλημάτων



Σήμερα

- Επίλυση Προβλημάτων



Flow

Flow in [positive psychology](#), also known colloquially as being **in the zone** or **locked in**, is the [mental state](#) in which a person performing some activity is fully immersed in a feeling of energized [focus](#), full involvement, and enjoyment in the process of the activity. In essence, flow is characterized by the complete absorption in what one does, and a resulting transformation in one's sense of time.^[1]

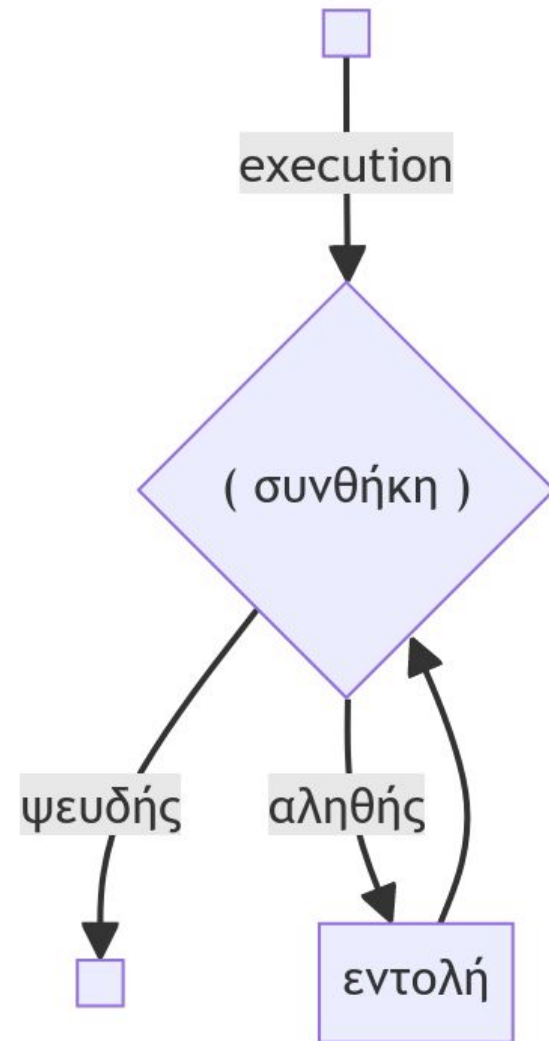
From [Wikipedia](#)

Δομές Επανάληψης / Loops / Βρόχοι

Εντολή while (while Statement)

Η εντολή while επαναλαμβάνει μια άλλη εντολή όσο η λογική συνθήκη είναι αληθής.

while (συνθήκη)
εντολή



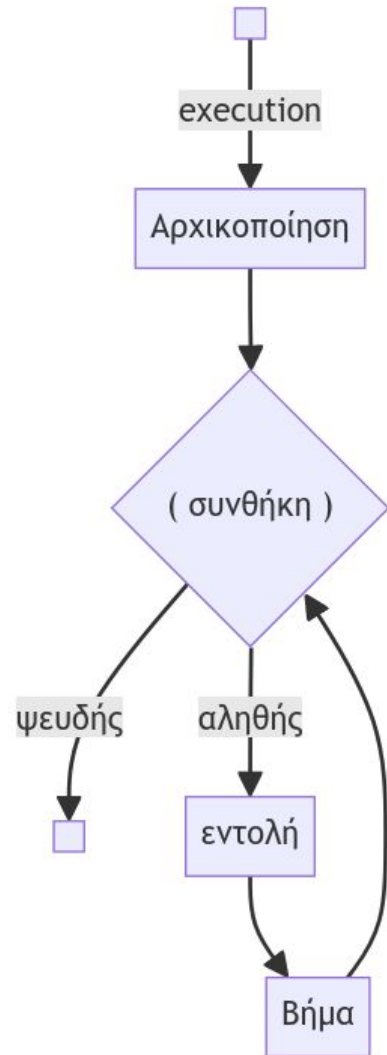
Εντολή for (for Statement)

Η εντολή for: αρχικοποιεί μεταβλητές, επαναλαμβάνει μια εντολή όσο η λογική συνθήκη είναι αληθής και στο τέλος κάθε επανάληψης εκτελεί το βήμα. Γενική μορφή:

for (αρχικοποίηση ; συνθήκη ; βήμα)
εντολή

Παράδειγμα:

```
int i;  
for ( i = 0 ; i < 100 ; i++ )  
    printf("Hello world\n");
```



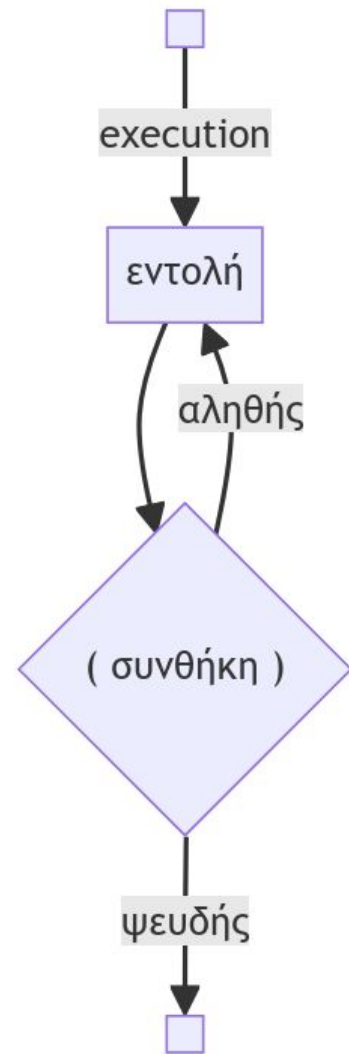
Εντολή do-while (do-while Statement)

Η εντολή do-while τρέχει πρώτα μια φορά την εντολή και στην συνέχεια ελέγχει την λογική συνθήκη για το αν χρειάζεται άλλη επανάληψη.

do

εντολή

while (συνθήκη);



Warm Up

Θέλω να τυπώσω όλους τους τριψήφιους άρτιους σε φθίνουσα σειρά (998 996 994 ... 100). Πως;

Θέλω να τυπώσω όλους τους τριψήφιους άρτιους σε φθίνουσα σειρά (998 996 994 ... 100). Πως;

Ένα for loop με μια μεταβλητή που μειώνεται:

```
for(i = 998 ; i >= 100 ; i -= 2) {  
    printf("%d\n", i);  
}
```

Θέλω να βρω το γινόμενο όλων των τριψήφιων περιττών που διαιρούνται με το 7. Πως;

Θέλω να βρω το γινόμενο όλων των τριψήφιων περιττών που διαιρούνται με το 7. Πως;

Ένα for loop με μια μεταβλητή που αυξάνεται και έλεγχο για $\text{mod } 7 = 0$:

```
for(product = 1, i = 100 ; i <= 999 ; i += 2) {  
    if ( i % 7 == 0 )  
        product *= i;  
}
```

Θέλω να βρω το γινόμενο όλων των τριψήφιων περιττών που διαιρούνται με το 7. Πως;

Ένα for loop με μια μεταβλητή που αυξάνεται και έλεγχο για $\text{mod } 7 = 0$:

```
for(prod = 1, i = 105 ; i <= 999 ; i += 14) {  
    prod *= i;  
}
```

Χρειάζομαι 2-3 εθελοντές/ντριες

ssh ubuntu@...

password: ilovedi@uoa

Θέματα

- Σχολιασμός Προγραμμάτων
- Δημιουργία README
- Μορφοποίηση Κώδικα
- Editors
- Git, Command Line

Kahoot Time!

Για την Επόμενη Φορά

- [How to write good comments](#)
- README.md guides: [[1](#)], [[2](#)], [[3](#)]

Ευχαριστώ και καλή συνέχεια εύχομαι!
Keep coding ;)