Laboratorio IncApache

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IncApache (is not comparable to Apache) è il terzo ed ultimo laboratorio del corso di SET, costituito dalla parziale implementazione di un web server ispirato ad Apache. L'implementazione del server supporta le versioni 1.0 e 1.1 del protocollo http, e permette l'utilizzo dei metodi query HEAD e GET, più ristretto rispetto ad Apache che permette l'utilizzo dei metodi OPTIONS, POST, PUT, DELETE, TRANCE, CONNECT.

Per controllare il corretto funzionamento del programma abbiamo utilizzato jmeter, con il quale è possibile inviare numerose richieste in breve tempo.

Di seguito riportiamo i risultati degli esperimenti:

Esempio n°1: 100 utenti in 0,5 secondi per 1 loop

Metodo GET

Richieste: /index.html

/epochtime.html

Esempio n°2: 50 utenti in 0.25 secondi per 2 loop

Metodo GET

Richieste: /index.html

/epochtime.html

timeStamp	responseCode	responseMessage	threadName	grpThreads	URL
15778120899991	200	OK	Thread Group 1-1	6	/index.html
15778120899991	200	OK	Thread Group 1-2	11	/index.html
15778120899994	200	OK	Thread Group 1-5	12	/index.html
15778120899994	200	OK	Thread Group 1-3	11	/index.html
15778120899994	200	OK	Thread Group 1-4	12	/index.html
15778120899995	200	OK	Thread Group 1-6	12	/index.html
15778120899997	200	OK	Thread Group 1-1	13	/epochtime.html
15778120899998	200	OK	Thread Group 1-7	13	/index.html
15778120899998	200	OK	Thread Group 1-9	15	/index.html
15778120900008	200	OK	Thread Group 1-4	15	/epochtime.html
15778120900008	200	OK	Thread Group 1-3	14	/epochtime.html
15778120900008	200	OK	Thread Group 1-5	15	/epochtime.html
15778120900008	200	OK	Thread Group 1-2	14	/epochtime.html
15778120900008	200	OK	Thread Group 1-6	15	/epochtime.html
15778120899998	200	OK	Thread Group 1-10	17	/index.html
15778120900015	200	OK	Thread Group 1-9	20	/epochtime.html
15778120900012	200	OK	Thread Group 1-7	19	/epochtime.html
15778120899999	200	OK	Thread Group 1-8	18	/index.html
15778120900000	200	OK	Thread Group 1-11	21	/index.html
15778120900036	200	OK	Thread Group 1-11	23	/epochtime.html
15778120900009	200	OK	Thread Group 1-14	28	/index.html
15778120900013	200	OK	Thread Group 1-15	33	/index.html
15778120900027	200	OK	Thread Group 1-10	39	/epochtime.html
15778120900013	200	OK	Thread Group 1-13	41	/index.html
15778120900015	200	OK	Thread Group 1-16	44	/index.html
15778120900033	200	OK	Thread Group 1-8	47	/epochtime.html
15778120900003	200	OK	Thread Group 1-12	51	/index.html
15778120900020	200	OK	Thread Group 1-17	53	/index.html
15778120900042	200	OK	Thread Group 1-14	56	/epochtime.html
15778120900044	200	OK	Thread Group 1-15	57	/epochtime.html
15778120900021	200	OK	Thread Group 1-18	59	/index.html
15778120900049	200	OK	Thread Group 1-13	63	/epochtime.html
15778120900051	200	OK	Thread Group 1-16	64	/epochtime.html
15778120900025	200	OK	Thread Group 1-19	66	/index.html
15778120900057	200	OK	Thread Group 1-12	67	/epochtime.html
15778120900059	200	OK	Thread Group 1-17	66	/epochtime.html
15778120900025	200	OK	Thread Group 1-20	67	/index.html
15778120900025	200	OK	Thread Group 1-21	68	/index.html
15778120900026	200	OK	Thread Group 1-23	70	/index.html
15778120900066	200	OK	Thread Group 1-18	71	/epochtime.html
15778120900026	200	OK	Thread Group 1-22	72	/index.html
15778120900073	200	OK	Thread Group 1-19	72	/epochtime.html
15778120900028	200	OK	Thread Group 1-24	74	/index.html
15778120900028	200	OK	Thread Group 1-25	77	/index.html
15778120900081	200	OK	Thread Group 1-20	79	/epochtime.html
15778120900083	200	OK	Thread Group 1-21	80	/epochtime.html
15778120900085	200	OK	Thread Group 1-23	79	/epochtime.html
15778120900029	200	OK	Thread Group 1-26	78	/index.html
15778120900089	200	OK	Thread Group 1-22	78	/epochtime.html
15778120900035	200	OK	Thread Group 1-27	77	/index.html
15778120900094	200	OK	Thread Group 1-24	77	/epochtime.html
15778120900097	200	OK	Thread Group 1-25	76	/epochtime.html

def2

timeStamp	responseCode	responseMessage	threadName	grpThreads	URL
1577813530367	200	OK	Thread Group 1-1	4	/index.html
1577813530371	200	OK	Thread Group 1-4	5	/index.html
1577813530369	200	OK	Thread Group 1-3	4	/index.html
1577813530379	200	OK	Thread Group 1-1	8	/epochtime.html
1577813530369	200	OK	Thread Group 1-2	4	/index.html
1577813530380	200	OK	Thread Group 1-4	11	/epochtime.html
1577813530386	200	OK	Thread Group 1-10	15	/index.html
1577813530381	200	OK	Thread Group 1-6	19	/index.html
1577813530380	200	OK	Thread Group 1-5	22	/index.html
1577813530384	200	OK	Thread Group 1-1	23	/index.html
1577813530384	200	OK	Thread Group 1-7	26	/index.html
1577813530386	200	OK	Thread Group 1-2	27	/epochtime.html
1577813530381	200	OK	Thread Group 1-3	27	/epochtime.html
1577813530388	200	OK	Thread Group 1-4	27	/index.html
1577813530390	200	OK	Thread Group 1-10	29	/epochtime.html
1577813530393	200	OK	Thread Group 1-6	36	/epochtime.html
1577813530397	200	OK	Thread Group 1-5	39	/epochtime.html
1577813530398	200	OK	Thread Group 1-1	42	/epochtime.html
1577813530401	200	OK	Thread Group 1-7	45	/epochtime.html
1577813530403	200	OK	Thread Group 1-2	49	/index.html
1577813530409	200	OK	Thread Group 1-4	49	/epochtime.html
1577813530407	200	OK	Thread Group 1-3	48	/index.html
1577813530412	200	OK	Thread Group 1-10	48	/index.html
1577813530416	200	OK	Thread Group 1-6	48	/index.html
1577813530420	200	OK	Thread Group 1-5	48	/index.html
1577813530388	200	OK	Thread Group 1-9	48	/index.html
1577813530426	200	OK	Thread Group 1-7	48	/index.html
1577813530428	200	OK	Thread Group 1-2	48	/epochtime.html
1577813530388	200	OK	Thread Group 1-11	47	/index.html
1577813530433	200	OK	Thread Group 1-3	47	/epochtime.html
1577813530435	200	OK	Thread Group 1-10	46	/epochtime.html
1577813530436	200	OK	Thread Group 1-6	45	/epochtime.html
1577813530438	200	OK	Thread Group 1-5	44	/epochtime.html
1577813530441	200	OK	Thread Group 1-7	43	/epochtime.html
1577813530440	200	OK	Thread Group 1-9	42	/epochtime.html
1577813530389	200	OK	Thread Group 1-12	42	/index.html
1577813530445	200	OK	Thread Group 1-11	42	/epochtime.html
1577813530388	200	OK	Thread Group 1-8	42	/index.html
1577813530390	200	OK	Thread Group 1-15	42	/index.html
1577813530392	200	OK	Thread Group 1-17	42	/index.html
1577813530394	200	OK	Thread Group 1-16	42	/index.html
1577813530394	200	OK	Thread Group 1-13	42	/index.html
1577813530460	200	OK	Thread Group 1-9	42	/index.html
1577813530461	200	OK	Thread Group 1-12	42	/epochtime.html
1577813530463	200	OK	Thread Group 1-11	42	/index.html
1577813530465	200	OK	Thread Group 1-8	42	/epochtime.html
1577813530466	200	OK	Thread Group 1-15	42	/epochtime.html
1577813530468	200	OK	Thread Group 1-16	42	/epochtime.html
1577813530469	200	OK	Thread Group 1-13	42	/epochtime.html
1577813530467	200	OK	Thread Group 1-17	42	/epochtime.html
1577813530470	200	OK	Thread Group 1-9	42	/epochtime.html
1577813530472	200	OK	Thread Group 1-12	41	/index.html

Response Header: nel caso di richiesta accettata

```
HTTP/1.1 200 OK
Date: Tue, 31 Dec 2019 17:09:31 GMT
Set-Cookie: id=68; Expires=Tue, 31 Dec 2020 17:09:31 GMT;
Server: incApache for SET.
Content-Length: 936
Content-Type: text/html; charset=us-ascii
Last-Modified: Tue, 03 Dec 2019 13:36:19 GMT
```

Response Header: nel caso di richiesta non trovata

```
HTTP/1.1 404 Not Found
Date: Tue, 31 Dec 2019 17:09:31 GMT
Server: incApache for SET.
Content-Length: 250
Content-Type: text/html
Last-Modified: Tue, 03 Dec 2019 13:36:19 GMT
```

Problemi riscontrati:

Nei casi in cui mandiamo richieste di tipo diverso simultaneamente, non riuscire ad accertare se l'ordine nel quale vengono servite sia appropriato.

Per riuscire ad attivare il multi-thread con pipeline è necessario eseguire molte richieste simultaneamente, anche se il limite esatto di richieste che il web server può servire senza dover ricorrere al metodo precedentemente citato non è noto.