erlang学习(1)

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你将会学到

- 如何安装
- say Hello 给 world
- 一个简单的TCP Client
- 进程、消息

安装

必要资源

- Erlang网站
  - http://www.erlang.org
- 你所需要的
  - otp_doc_html_R12B-0.tar.gz
  - otp_src_R12B-0.tar.gz
- http://www.erlang.org/download.html

解包、配置与安装

```
# tar xzvf opt_src_R12B-0.tar.gz
# cd opt_src_R12B-0/
# ./configure
# make
# make install
```

Hello 下 world

交互式Hello

```
HD@~$erl
Erlang (BEAM) emulator version 5.6 [source] [smp:2] [async-
threads:0] [kernel-poll:false]

Eshell V5.6  (abort with ^G)
1> io:format("Hello world~n").
Hello world
ok
2> q().
ok
3> HD@~$
```

让程序say Hello

声明了我是谁

helloworld.erl

怎么用我里面的方法

```
-module (helloworld).
-export ([sayhello/0]).

sayhello () ->
    io:format("Hello World~n").
```

编译、运行

```
$erlc helloworld.erl
$ls -l
total 32
-rw-r--r--  1 HD  HD   636 12 25 14:57 helloworld.beam
-rw-r--r--@ 1 HD  HD    93 12 25 14:53 helloworld.erl
$erl
Erlang (BEAM) emulator version 5.6 [source] [smp:2] [async-threads:0]
[kernel-poll:false]

Eshell V5.6  (abort with ^G)
1> helloworld:sayhello().
Hello World
ok
2> q().
ok
3> $
```

一个简单的TCP客户端

需求

- 建立一个TCP连接到一个WEB服务器
- 将服务器返回的数据显示出来

先来代码

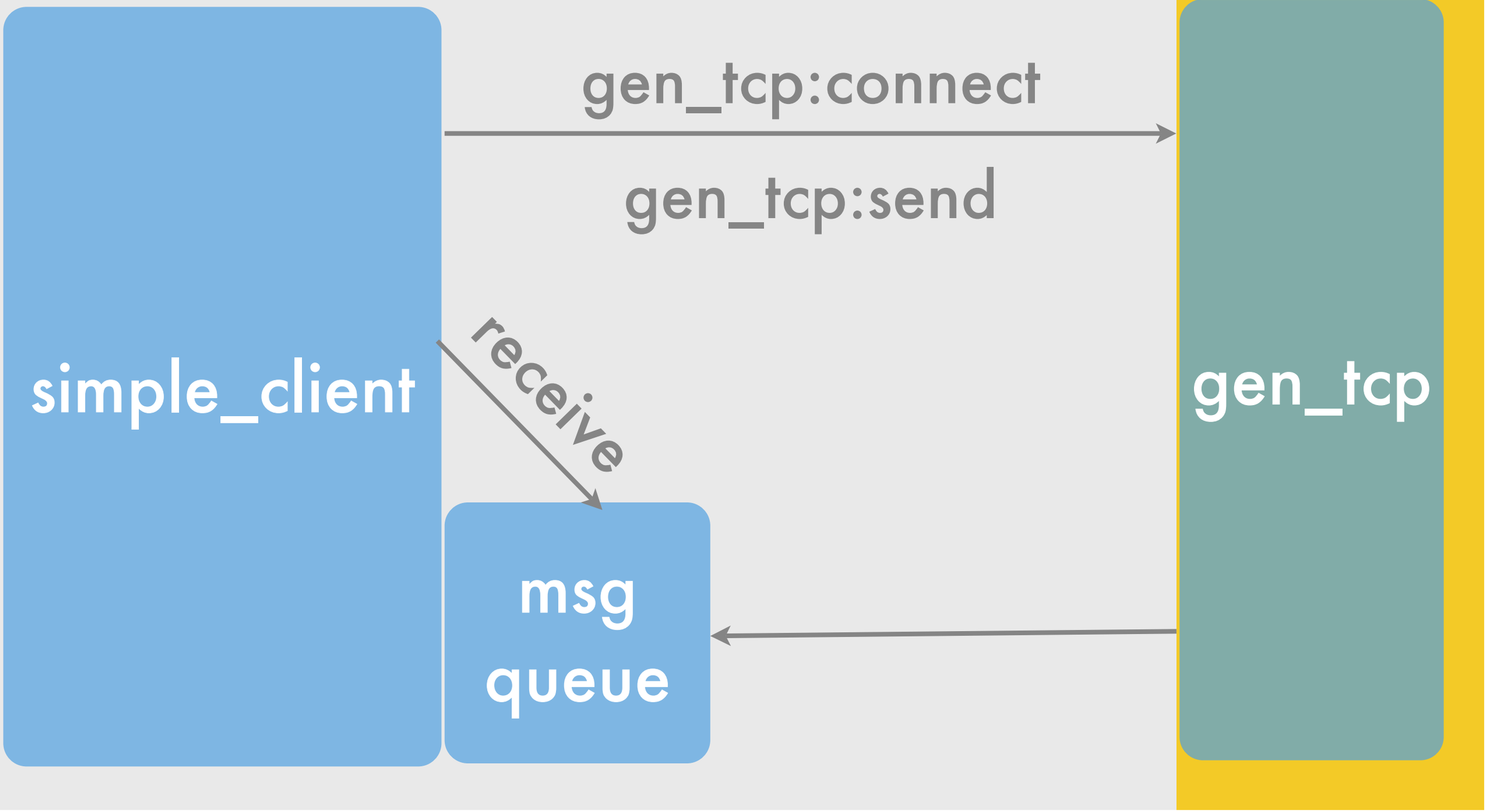
```
-module (simple_client).
-export ([nano_get_url/0,nano_get_url/1]).

nano_get_url ( )  ->
    nano_get_url("www.sina.com.cn").
nano_get_url (Host) ->
    {ok,Socket}=gen_tcp:connect(Host,80,[binary,{packet,0}]),
    ok=gen_tcp:send(Socket,"GET / HTTP/1.0\r\n\r\n"),
    receive_data(Socket,[]).
receive_data (Socket,SoFar) ->
    receive
        {tcp,Socket,Bin} ->
            receive_data(Socket,[Bin|SoFar]);
        {tcp_closed,Socket} ->
            list_to_binary(lists:reverse(SoFar))
    end.
```

发起连接

能看懂的举手！

消息


gen_tcp:connect
gen_tcp:send
simple_client
receive
msg
queue
gen_tcp

创造进程

- 创建一个新的进程，新进程执行Fun函数
  - pid=spawn(Fun)
- 将进程号注册成通用的名字
  - register(name, Pid))
- 将自己的进程号(self())参数传给新进的进程

消息的发送

- pid ! Message
- 将消息发给Pid所标识的进程，消息发送是异步发送的。发送者执行时不会阻塞，不需等待会继续执行后边的代码
- 执行后返回Message，这样你就可以用类似 Pid1 ! Pid2 ! Pid3 ! Message的方式，给三个进程发送消息

消息接收

```
receive
    Pattern1 [when GuardSeq1] ->
        Body1;
    ...;
    PatternN [when GuardSeqN] ->
        BodyN
after
    ExprT ->
        BodyT
end
```

递归、模式匹配

模式匹配

递归

```
receive_data (Socket,SoFar) ->
    receive
        {tcp,Socket,Bin} ->
            receive_data(Socket,[Bin|SoFar]);
        {tcp_closed,Socket} ->
            list_to_binary(lists:reverse(SoFar))
    end.
```

运行与测试

```
[xiaohong@localhost test]$ erlc simple_client.erl
[xiaohong@localhost test]$ ls -l
total 8
-rw-rw-r– 1 xiaohong xiaohong 952 Dec 25 17:43 simple_client.beam
-rw-rw-r– 1 xiaohong xiaohong 526 Dec 25 17:43 simple_client.erl
[xiaohong@localhost test]$ erl
Erlang (BEAM) emulator version 5.6 [source] [async-threads:0] [hipe] [kernel-poll:false]

Eshell V5.6  (abort with ^G)
1> A = simple_client:nano_get_url().
<<"HTTP/1.0 403 Forbidden\r\nServer: CachePower/1.3.1.dev\r\nMime-Version: 1.0\r
\nDate: Tue, 25 Dec 2007 01:44:38 GMT\r\nConten"...>>
```

格式化输出

```
2> io:format("~p~n",[A]).
<<"HTTP/1.0 403 Forbidden\r\nServer: CachePower/1.3.1.dev\r\nMime-Version:
1.0\r\nDate: Tue, 25 Dec 2007 01:44:38 GMT\r\nContent-Type: text/html\r
\nContent-Length: 1059\r\nExpires: Tue, 25 Dec 2007 01:44:38 GMT\r\nX-Squid-
Error: ERR_ACCESS_DENIED 0\r\nX-Cache: MISS from 152-66.sina.com.cn\r
\nConnection:
......
HREF=\"mailto:webmaster\">webmaster</A>. \n\n\n<BR clear=\"all\">\n<HR
noshade size=\"1px\">\n<ADDRESS>\nGenerated Tue, 25 Dec 2007 01:44:38
GMT by 152-66.sina.com.cn (CachePower/1.3.1.dev)\n</ADDRESS>\n</BODY></
HTML>\n">>
ok
```

字符串处理

```
3> string:tokens(binary_to_list(A),"\r\n").
["HTTP/1.0 403 Forbidden","Server: CachePower/1.3.1.dev",
 "Mime-Version: 1.0","Date: Tue, 25 Dec 2007 01:44:38 GMT",
 "Content-Type: text/html","Content-Length: 1059",
 "Expires: Tue, 25 Dec 2007 01:44:38 GMT",
"X-Squid-Error: ERR_ACCESS_DENIED 0",
"X-Cache: MISS from 152-66.sina.com.cn","Connection: close",
"<HTML><HEAD><META HTTP-EQUIV=\"Content-Type\"
......
"<A HREF=\"http://10.54.23.32/\">http://10.54.23.32/</A>",
"<P>","The following error was encountered:","<UL>","<LI>",
"<STRONG>","Access Denied.","</STRONG>",
[...]|...]
```

一步一个脚印