# 32.22 Class variables and class objects

NOTES:

1) The `vpiWaitingProcesses` iterator on a mailbox or semaphore shall **show return** the processes waiting on the object **resource**.

   — Waiting process means either frame or task/function handle. A process may be waiting to retrieve a message from a mailbox or waiting for the semaphore resource key for example.

2) `vpiMessages` iterator shall return all the messages in a mailbox.

3) `vpiClassDefn` returns the C class `defn` that was used to create the handle. `vpiActualDefn` returns the C class `defn` that the handle object points to when the query is made. **If the class var has the value of NULL, vpiActualDefn shall return a NULL handle.** The difference can be seen in the example below:

   ```
   class Packet
       ...
   endclass : Packet
   
   class LinkedPacket extends Packet
       ...
   endclass : LinkedPacket
   
   LinkedPacket l = new;
   Packet p = l;
   
   In this example, the `vpiClassDefn` of variable `p` is Packet, but the `vpiActualDefn` is “LinkedPacket”.
   ```

4) `vpiClassDefn/vpiActualDefn` both shall return **NULL** for built-in classes.

5) `vpiClassType` can be one of `vpiUserDefinedClass`, `vpiMailboxClass`, `vpiSemaphoreClass`.

6) `vpiAccessType` can be one of `vpiPublicAcc`, `vpiProtectedAcc`, `vpiLocalAcc`. 

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