A Platform Independent GUI For The PeANUt Software Simulator

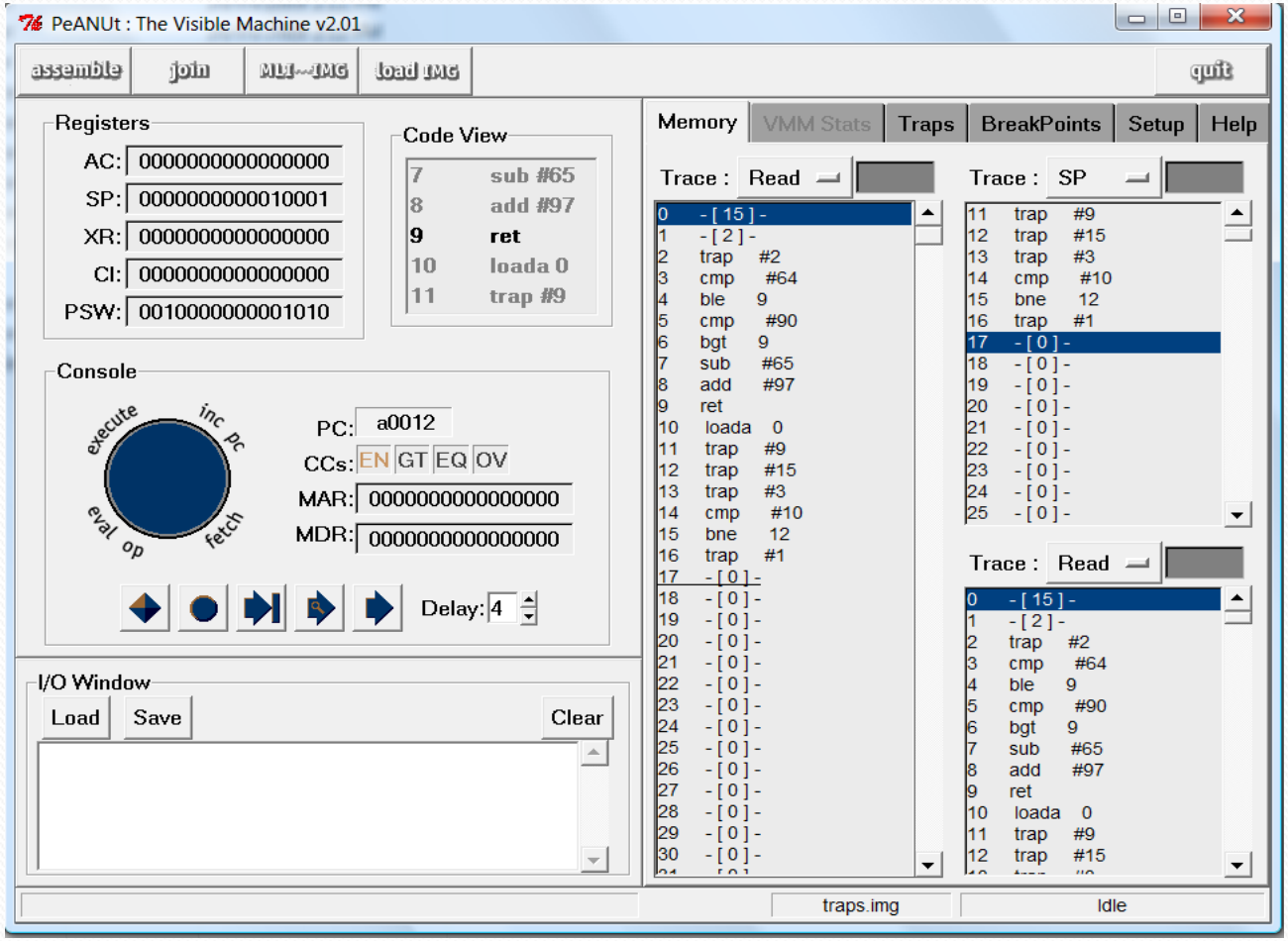
Project Supervisor- Dr Peter Strazdins
Project Developer- Avinash G Prasad

PeANUt

- PeANUt was created by the department of Computer Science for teaching purposes.

- PeANUt is a 16 bit simple software microprocessor with a 16bit arithmetic and logic unit, an addressing unit, an execution unit and its own primitive operating system.

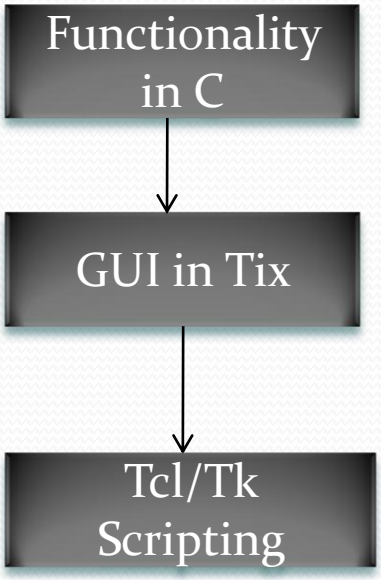
Original PeANUt Screenshot



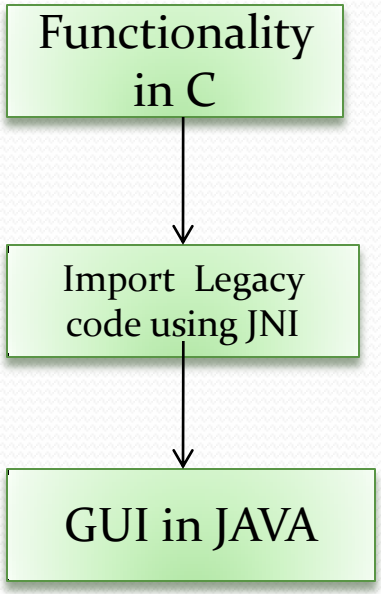
Key Issues

- Platform Compatibility
- Maintainability of the software
- Uses Tcl/Tk scripting language

Old PeANUt vs. New PeANUt



Old PeANUt



New PeANUt

Java Native Interface

Advantages

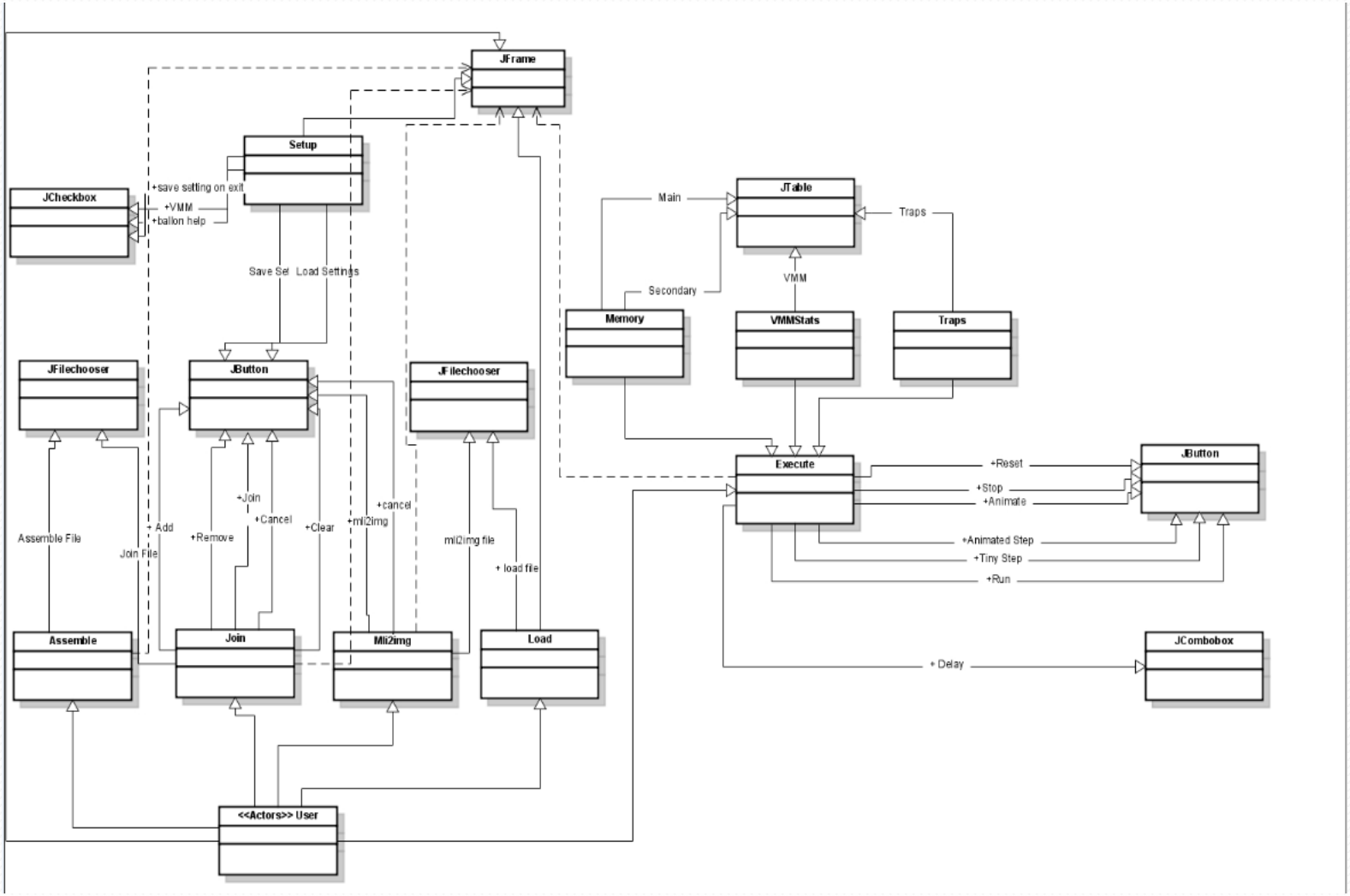
- Use the existing library that was previously written in another languages.
- Allows JAVA to access some hardware features
- Increasing the speed of execution

Java Native Interface

Disadvantages

- Write Once Run Anywhere is not possible
- Run time errors debugging is difficult in native code
- An applet can not call a native method
- Security risk is potential

Class Diagram

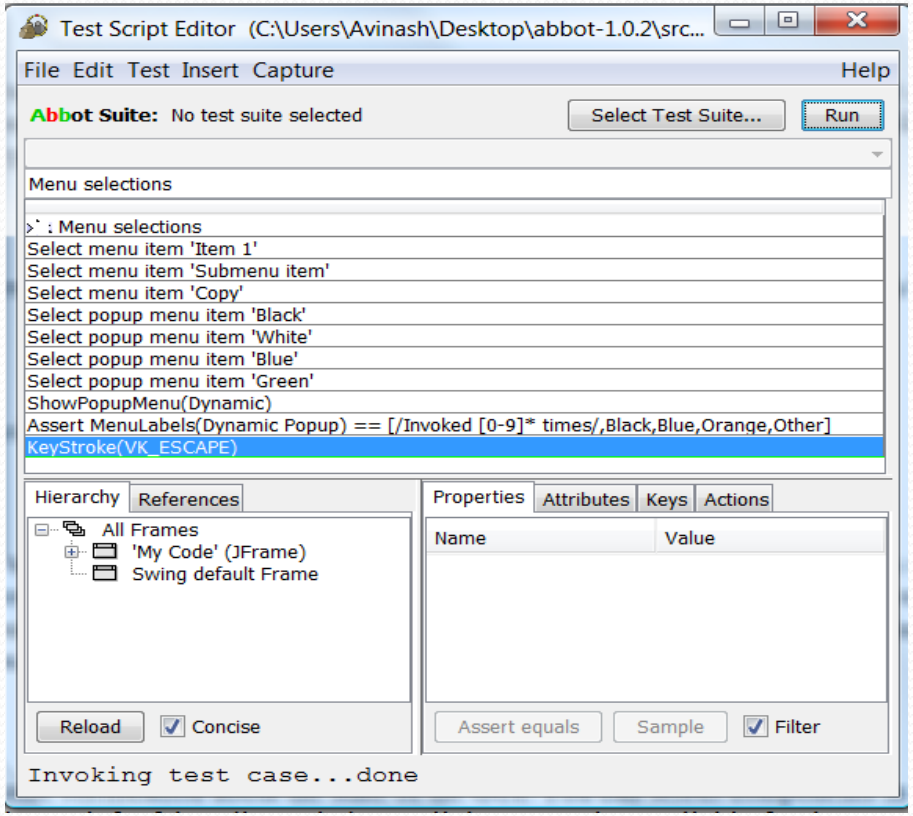


Sample JNI Code

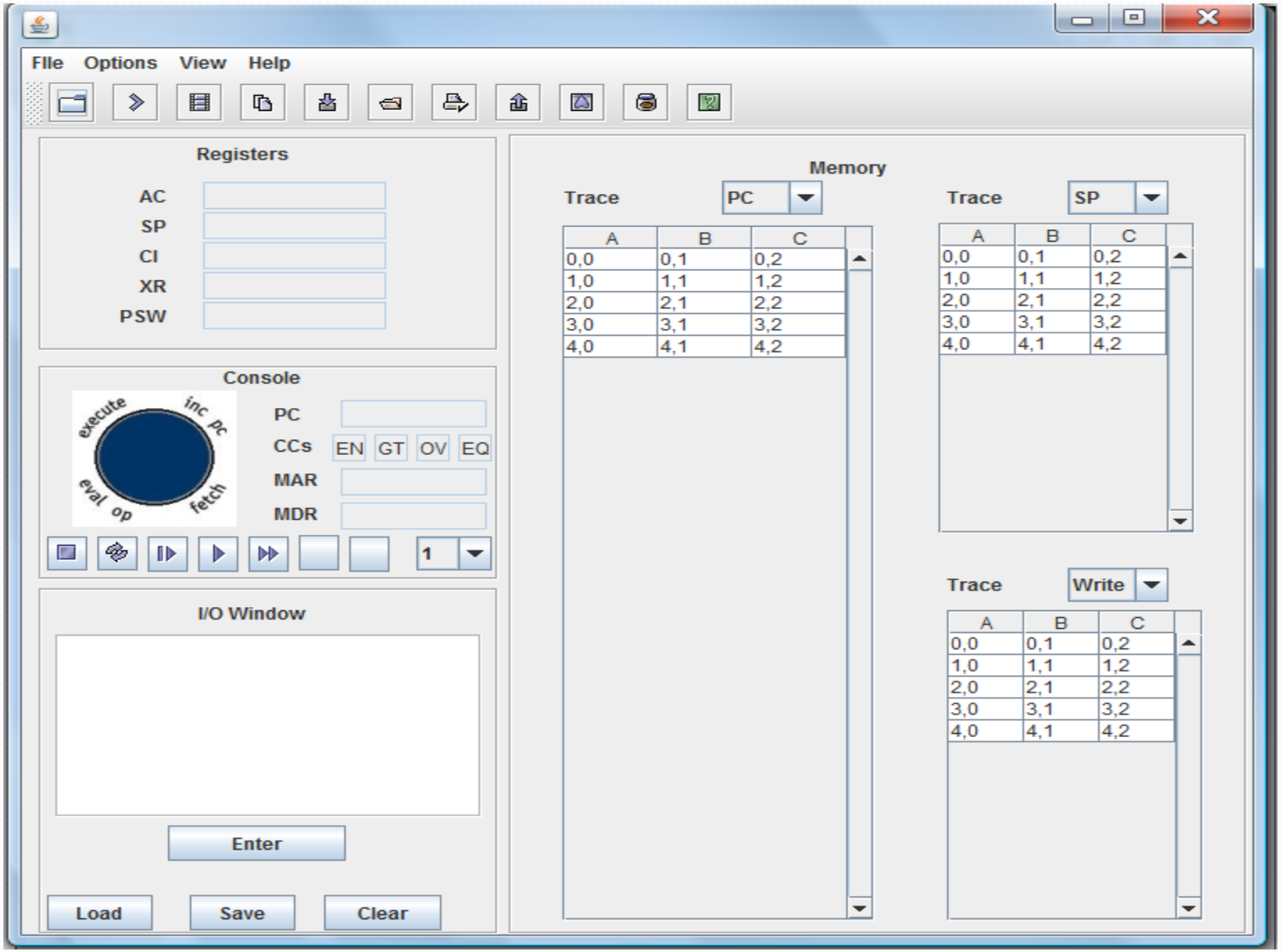
```
//Java Code Example- Declare a native function
 public native int Cfunction();

// Java-Call the native method
int n= Cfunction();

//C Declaration
JNIEXPORT jint JNICALL Java_Example_
   Cfunction(JNIEnv *jenv, jobject job)
```

Automated Testing Using Abott and Costello

Running Scripts with Costello



New PeANUt


File Options View Help
Registers
AC
SP
CI
XR
PSW
Console
execute
inc pc
eval op
fetch
PC
CCs EN GT OV EQ
MAR
MDR
1
I/O Window
Enter
Load
Save
Clear
Memory
Trace PC
A B C
0,0 0,1 0,2
1,0 1,1 1,2
2,0 2,1 2,2
3,0 3,1 3,2
4,0 4,1 4,2
Trace SP
A B C
0,0 0,1 0,2
1,0 1,1 1,2
2,0 2,1 2,2
3,0 3,1 3,2
4,0 4,1 4,2
Trace Write
A B C
0,0 0,1 0,2
1,0 1,1 1,2
2,0 2,1 2,2
3,0 3,1 3,2
4,0 4,1 4,2

Thank You