

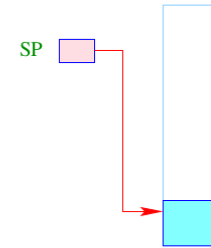
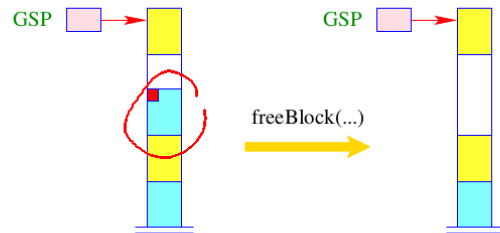
Script generated by TTT

Title: Seidl: Virtual_Machines (04.07.2016)

Date: Mon Jul 04 10:23:47 CEST 2016

Duration: 17:36 min

Pages: 11



Organisational cells as well as actual parameters must be allocated inside the old block ...

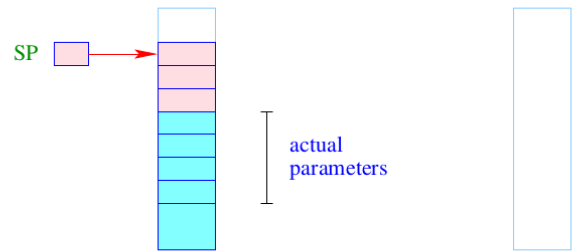
Approach

We allocate a fresh block for every function call ...

Problem

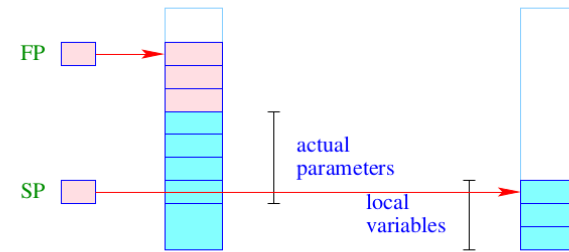
When ordering the block **before** the call, we do not yet know the space consumption of the called function.

⇒ We order the new block **after** entering the function body!



When entering the new function, we now allocate the new block ...

463



In particular, the local variables reside in the new block ...

464

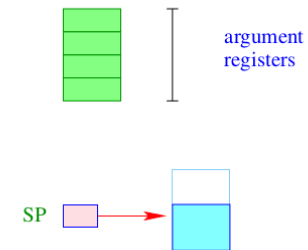
⇒ We address ...

- the formal parameters **relatively** to the frame-pointer;
- the local variables **relatively** to the stack-pointer.

⇒ We must re-organize the complete code generation ...

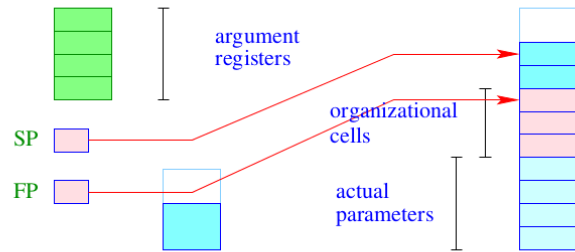
Alternative: Passing of parameters in registers ...

465

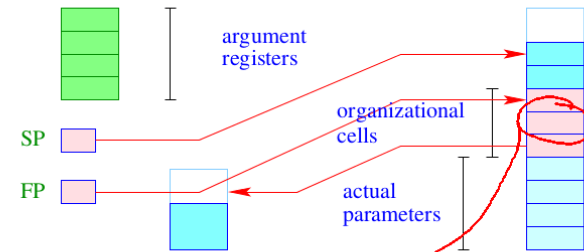


The values of the actual parameters are determined **before** allocation of the new stack frame.

466



The complete frame is allocated inside the new block – plus the space for the current parameters.



Inside the new block, though, we must store the old SP (possibly +1) in order to correctly return the result ...

3. Idea: Hybrid Solution

- For the first k threads, we allocate a separate stack area.
- For all further threads, we successively use one of the existing ones !!!



- For few threads extremely simple and efficient;
- For many threads amortized storage usage.

3. Idea: Hybrid Solution

- For the first k threads, we allocate a separate stack area.
- For all further threads, we successively use one of the existing ones !!!



- For few threads extremely simple and efficient;
- For many threads amortized storage usage.