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; examples for lecture 9 Feb 2021
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```
; function call assembly code, write by hands
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```
.symbol
    fp 27 ; r27
    sp 28 ; r28
    retv 29 ; r29
    rads 30 ; r30

.code 0
:main
    mov fp #1000 ; frame at M[1000]
    mov sp #2000 ; stack at M[2000]
    mov r1 #11
    push sp r1 ; pass #10
    jal rads double
    mov r1 retv ; y = double(10)
    trap r1 #1 ; print y
    trap r0 #0

:double ; use r1
    push fp r1 ; save r1
    pop sp r1 ; get x
    add retv r1 r1 ; ret x + x
    pop fp r1 ; restore r1
    ret rads
.end
```

```
; -----
```

```
; function call, compile from high level
```

```
; double
```

```
// example double
```

```
double(x)
    return x + x
```

```
main()
    y = double(33)
    print(y)
```

```
; output from compiler (Rz 3.6)
```

```
.symbol
    fp 30
    sp 29
    retval 28
```

```

    rads 27
.code 0
    mov fp #3500
    mov sp #3000
    jal rads main
    trap r0 #0
; fun double pv 1
:double
st r1 @1 fp
st r2 @2 fp
add fp fp #3
st rads @0 fp
pop sp r1
add r2 r1 r1
mov retval r2
jmp L101
:L101
ld rads @0 fp
sub fp fp #3
ld r2 @2 fp
ld r1 @1 fp
ret rads
; fun main pv 0
:main
; gnAsg :(#1 (call double 33 ))
st r1 @1 fp
st r2 @2 fp
add fp fp #3
st rads @0 fp
mov r2 #33
push sp r2
jal rads double
mov r1 r28
trap r1 #1
:L102
ld rads @0 fp
sub fp fp #3
ld r2 @2 fp
ld r1 @1 fp
ret rads
.data 200
.end

; -----

;  example of while loop

// while loop

main()
    i = 0
    while( i < 5 )

```

```
        print(i)
        i = i + 1

; -----

; example of array

// array

ax[5]

main()
    ax[0] = 10
    ax[1] = 20
    ax[2] = 30
    i = 0
    while( i < 3 )
        ax[i] = ax[i] + 2
        print(ax[i])
        i = i + 1

; -----

end
```