Code Generation 3

Prat Gary

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1 Exercise 81

main: main.p:

 $\begin{array}{lll} Prologue(8) & Prologue(0) \\ SUB R0,R0,R0 & LD R1,[FP+8] \\ ADD R1,R0,1 & LD R2,[R1-4] \\ ST R1,[FP-4] & LD R3,[FP+8] \\ Push(FP) & ST R2,[R3-8] \\ Call main.p & Epilogue \\ ADD SP,SP,4 & RET \\ Epilogue & \\ \end{array}$

2 Exercise 82

RET

main: main.p: Prologue(12) Prologue(8) SUB R0,R0,R0SUB R0,R0,R0 ADD R1,R0,5 ADD R1,R0,4 ST R1,[FP-4] ST R1,[FP-4] Push(FP) ADD R2,R0,5 LD R3,[FP+8] call main.p ADD SP,SP,4 ST R2,[R3-8] Epilogue LD R4,[FP-4] LD R5,[FP+8] RETLD R6,[R5-8] ADD R7,R4,R6 LD R8,[FP+8] ST R7,[R8-12] Epilogue RET

3 Exercise 82 bis

```
begin
var x:int
var y:int
var z:int
Procedure P(u.int)
begin
var x:int
var t:int
x:=4
x:=5
z:= x+u
end
call p(17)
call(x-1)
end
```

main: Prologue(12) **SUB R0,R0,R0** ADD R1,R0,5 ST R1,[FP-4] ADD R2,R0,17 Push(R2) Push(FP) call main.p ADD SP,SP,8 LD R3 [SP-4] SUB R4,R3,1 Push(R4) Push(FP) Call main.p ADD SP,SP,8 Epilogue RET

main.p:
Prologue(8)
SUB R0,R0,R0
ADD R1,R0,4
ST R1,[FP-4]
ADD R2,R0,5
LD R3,[FP+8]
ST R2,[R3-8]
LD R4,[FP-4]
LD R5,[FP+12]
ADD R6,R4,R5
LD R7,[FP+8]
ST R6,[R7-12]
Epilogue
RET