Niski Lab 11 – Code Generation Conceptual

Assembly Instructions:

load reg, id

store reg, id

print id

add reg, reg, reg

branch labelName

branchequal reg, reg, labelName

branchnotequal reg, reg, labelName

: labelName

Problem 1

A diagram of a diagram

Description automatically generated

a = b

load r1, b

store r1, a

Problem 2

A diagram of a diagram

Description automatically generated

a = b + c

load r1, c

load r2, b

add r1, r2, r3

store r3, a

Another solution:

load r1, b

load r2, c

add r1, r2, r3

store r3, a

Problem 3

A black arrow pointing to a circle

Description automatically generated

print a

Problem 4

A diagram of a diagram

Description automatically generated

if (a == b) {

print c

}

load r1, a

load r2, b

branchnotequal r1, r2, endIfLabel1

print c

: endIfLabel1

Problem 5

A diagram of a collection

Description automatically generated

{

if (a == b) {

print c

}

if (d == e) {

x = y

}

}

load r1, a

load r2, b

branchnotequal r1, r2, endIfLabel1  
print c  
: endIfLabel1

load r3, d

load r4, e

branchnotequal r3, r4, endIfLabel2

load r5, y

store r5, x

: endIfLabel2

Problem 6

A diagram of a flowchart

Description automatically generated

if (a == b) {

if (d == e) {

x = y

}

}

load r1, a

load r2, b

branchnotequal r1, r2, endIfLabel1

load r3, d

load r4, e

branchnotequal r3, r4, endIfLabel2

load r5, y

store r5, x

: endIfLabel2

: endIfLabel1

Problem 7

A diagram of a diagram

Description automatically generated

if (a == b) {

print d

} else {

print e

}

load r1, a

load r2, b

branchnotequal r1, r2, startElseBlock1

print d

branch endIfLabel1

: startElseBlock1

print e

: endIfLabel1

Problem 8

A diagram of a diagram

Description automatically generated

while (a == b) {

print c

}

: startWhileLabel1

load r1, a

load r2, b

branchEqual r1, r2, endWhileLabel1

print c

branch startWhileLabel1

: endWhileLabel1