Worksheet 4 - Programming with a Mini – assembler

Question a) – copy y to x

SET x=0,z=0

1. if( y==0 ) goto line (6)
2. z = z + 1
3. x = x + 1
4. y = y - 1
5. goto (1)
6. if( z==0 ) goto line (10)
7. z = z - 1
8. y = y + 1
9. goto line (6)
10. STOP

Question b) – add y to x

1. if( y==0 ) gotoline (4)
2. z = z + 1
3. x = x + 1
4. y = y - 1
5. goto line (1)
6. if( z==0 ) goto line (10)
7. z = z - 1
8. y = y + 1
9. goto line (6)
10. STOP

Question c) – work out the difference between x and y

1. SET tmp1=x, tmp2=y
2. if ( tmp1 == 0 ) goto [END]
3. if ( tmp2 == 0 ) goto
4. tmp1 = tmp1 – 1
5. tmp2 = tmp2 -1
6. goto line (2)
7. if ( tmp1 == 0 ) goto [END]
8. tmp2 = tmp2 + 1
9. tmp1 = tmp1 – 1
10. goto line (7)

Question d) – if( x>y ) goto L1 else goto L2

SET tmp1 = x , tmp2 = y

1. if ( x== 0 ) goto line (5)
2. x = x – 1
3. goto line (1)
4. if ( y==0 ) goto line ()
5. y = y – 1
6. goto line (4)
7. if ( tmp1 == 0 ) goto L1
8. tmp1 = tmp1 – 1
9. if ( tmp2 == 0 ) goto L2
10. tmp2 = tmp2 – 1
11. Goto line (1)
12. L2

Question e) multiply x to y, i.e. x=x\*y

SET s = 0

1. if ( x==0 ) goto line (5)
2. s = s + y
3. x = x – 1
4. goto line (1)
5. STOP

Question f) divide x by y , i.e. x=x/y

SET z=0,r=0

1. if ( x < y ) goto line (5) else goto line (2)
2. r = r + 1
3. x = x – y
4. goto line (1)
5. z = x // z keeps the remainder
6. x = r // x keeps the quotient
7. STOP