PS-6 COMP-301 (WEEK-8)
Problem-1:

a-)

```
let x= 5
   in let y= proc(z) –(t,z)
     in let t=5
       in (y 3)
```

Evaluation steps:
x= 5
y= proc(z)= -(t,z)= t-z
t= 5
y(3)
y= proc(3)= -(t,3)= t-3

In the last line of the above PROC code, it is said that we should put 3 in the procedure y. After the execution of the above PROC code, we obtain y to be t-3. However, there is no binding for t in the above PROC code. Therefore, the above PROC code (the 1st given PROC code) **run with error**. **(ERROR)**

b-)

```
let x= 1
   in let y= proc(z) –(z, x)
     in let x= 7
       in let z = 5
          in (y x)
```

Evaluation steps:
x= 1
y= proc(z)= -(z,1)= z-1
x= 7 (Instead of 1, starting from this code line, we should use 7 for the identifier x)
z= 5
y(7)= -(7,1)= 7-1= 6

The result of the above PROC code (the 2nd given PROC code) is **6**.

c-)

```
let x= 9
   in let y= proc(z) (z x)
     in let x = 0
       in let t = proc(x) if zero?(x) then 5 else 3
          in (y t)
```

Evaluation steps:
x= 9
y= proc(z) (z 9) = z(9)
x= 0
t= proc(x) 5
if zero?(0) then 5 else 3
t= proc(x) 3
(y (proc(x) 3)) = y(proc(x) 3)

For the above PROC code (the 3rd given one) , the result coming from the evaluations is **3**.