CSCI927 Service-Oriented Software Engineering (Assignment)

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1 PART ONE (7 MARKS)

1.1 Description on Designed Insurance Claim Handling Process

For the policyholder partition, he checked the policy, if the policy not cover the situation, the he abandon the claim, else, he send report to company, then he receive a claim form from company, then he fill the claim form and submit to company, then he wait the notification from company, if he get the notification that policy not cover the situation then he abandon the claim, else if he was asked to submit the additional files, he submit these files, else he wait the notification, then company give him the message if the claim is valid, if it is not valid, he abandon the claim, else he receive the payment detail.Finally when the payment is finished, the process end.

For the company, when the loss report is received, the process begin. Then, company send policyholder the claim form. Then company receive the form and check the claim. Company send policyholder message depend on whether or not the policy cover the situation or there are additional files needed in this process. If policy not cover the situation, company reject the claim, else if additional files are needed, company send file request to policyholder, else company check the claim if it is valid, if it is not valid, company reject the claim and send message to policyholder, else company inform the policyholder payment detail, then company recorded the claim and make the payment, if these two activities finished, company close the claim.

source:
https://www.oecd.org/finance/insurance/33964905.pdf
https://consumer.findlaw.com/insurance/the-insurance-claim-process.html
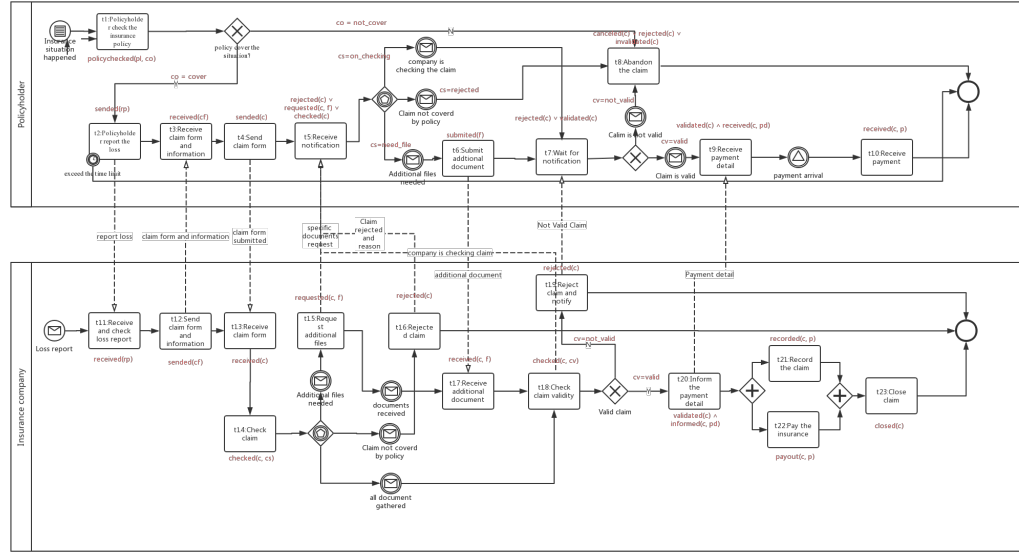
1.2 Designed BPMN Model

Fig. 1. BPMN Model

1.3 Semantic Effect Annotation

(a) Cumulative Effects of Tasks/Activities
   pl=policy,co=ifcover,rp=report,cf=claimform,c=claim,f=file,p=payment
   t1=policychecked(po,co)
   t2=sended(rp)
   t3=received(cf)
   t4=sended(c)
   t5=rejected(c)∨requested(c,f)∨checked(c)
   t6=submited(f)
   t7=rejected(c)∨checked(c)
   t8=canceled(p)∨rejected(c)∨invalidated(c)
   t9=validated(c)∧received(c,pd)
   t10=received(c,p)
   t11=received(rp)
   t12=sended(cf)
   t13=received(c)
   t14=checked(c,cs)
   t15=requested(c,f)
   t16=rejected(c)
   t17=received(c,f)
   t18=checked(c,cv)
   t19=rejected(c)

t20=validated(c)∨informed(c,pd)
t21=recorded(c,p)
t22=payout(c,p)
t23=closed(c)

$\forall c : policycover(c, not) \Leftrightarrow abandoned(c),$
$rejected(c) \Leftrightarrow closed(c),$
$invalidated(c) \Leftrightarrow abandoned(c)$

(b) Cumulative Effect Scenarios t2:scenario(1):<t1,{<t2>}>
t8:scenario(1):<t1,{<t8>}>
t8:scenario(2):<t1,t2,t3,t4,t5,{<t8>}>
t8:scenario(2):<t1,t2,t3,t4,t5,t6,t7,{<t8>}>
t10:scenario(1):<t1,t2,t3,t4,t5,t6,t7,t9,{<t10>}>
t16:scenario(1):<t11,t12,t13,t14,{<t16>}>
t19:scenario(1):<t11,t12,t13,t14,t15,t17,t18,{<t19>}>
t19:scenario(2):<t11,t12,t13,t14,t18,{<t19>}>
t23:scenario(1):<t11,t12,t13,t14,t15,t17,t18,t20,t21,t22,{<t23>}>
t23:scenario(2):<t11,t12,t13,t14,t17,t18,t20,t21,t22,{<t23>}>

2 PART TWO (3 MARKS)
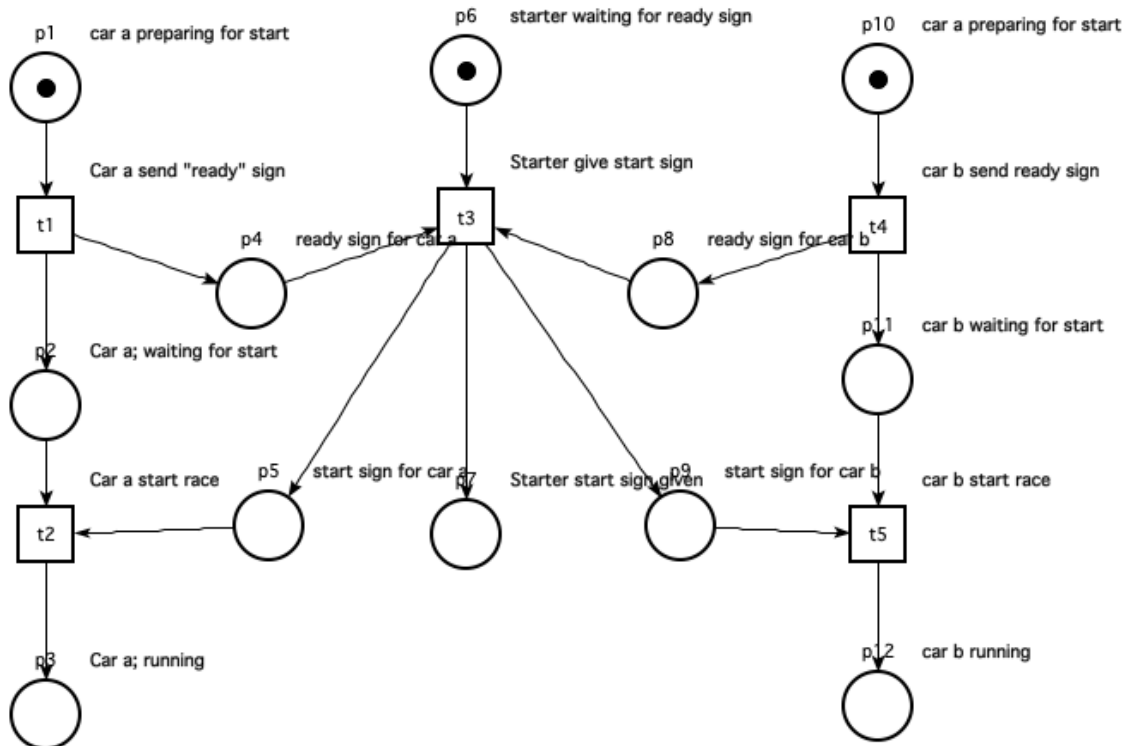
2.1 Designed Petri Net

Fig. 2. Petri Net

2.2   Analysis on the Petri Net

First, place1 (car a preparing for start) has a token, when t1 transition fired (send ready sign) the token was send to place4 (p4 ready sign for car a) and place2 (p2 car a waiting for start). Place 6 is starter waiting for ready sign, when transmission3(t3 starter give start sign) fired, the token in p6 was copied and send to place 5,6,7. (start sign for car a,b and starter start sign given). in this time transition 2 was fired, car a turn to place 3(running).

car b has the same situation.