```
#---------------------------- Domain Class----------------------------------
class Domain():
    def __init__(self, name, start, end):
        self.name = name
        self.values = range(start,end+1)
        self.vars = []


    def addVariable(self,variable):
        self.vars.append(variable)

    def getValues(self):
        return self.values

    def getVars(self):
        return vars

    def strSelectVariables(self):
        print("vars"+str(self.vars))
        res = ""
        for v in self.vars:
            res += "?" + v + " "
        return res

    def __str__(self):
        res = ":" + self.name + " rdf:type :Domain ;\n" + "\t:values "
        for val in self.values[:-1]:
            res += str(val) + ", "
        res += str(self.values[-1]) + " ;\n\t:variables"
        for var in self.vars[:-1]:
            res += " :" + str(var) + ","
        res += " :" + self.vars[-1] + ".\n\n"
        return res



#-------------------------- Constraint Class----------------------------------
class Constraint:
    def __init__(self):
        self.typeCons = ""
        self.vars = []
        self.values = []
        self.first = ""
        self.second = ""
        self.third = ""

    def addVar(self, var):
        self.vars.append(var)

    def addValue(self, value):
        self.values.append(value)

    def setTypeCons(self,typeCons):
        self.typeCons = typeCons
        if self.typeCons == "Reject:\n":
            self.first = " != "
            self.second = " || "
            self.third = " && "
        elif self.typeCons == "Accept:\n":
            self.first = " = "
            self.second = " && "
            self.third = " || "

    def __str__(self):
        print(self.vars)
        print(self.values)
        res = "\t\t( "
        for i in range(len(self.values)):
            res += "("
            for j in range(len(self.vars)):
                res += "?" + str(self.vars[j]) +  self.first +  str(self.values[i][j])
                if j == len(self.vars) - 1:
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73                      res += ")"
74                  else:
75                      res += self.second
76
77              if i != len(self.values) - 1:
78                  res += self.third
79          res += " )\n"
80          return res
81
82
83
84
85  #---------------------------- Script itself ---------------------------------
86  class MainRun:
87      def __init__(self):
88          self.inFileName = ""
89          self.outFileName = ""
90          self.domains = {}
91          self.fileOutRDF = None
92          self.fileOutSPAQRL = None
93
94      def writeDomains(self):
95          for d in self.domains.keys():
96              self.fileOutRDF.write(str(self.domains[d]))
97
98      def parseConstraints(self, file, nConst):
99          nConstParsed = 0
100         for line in file:
101             constraint = Constraint()
102             if("Vars:" in line):
103                 if nConstParsed < nConst:
104                     nVars = int(file.readline())
105                     for x in range(nVars):
106                         var = file.readline().rstrip('\n')
107                         constraint.addVar(var)
108                     typeCons = file.readline()
109                     constraint.setTypeCons(typeCons)
110                     nValues = int(file.readline())
111                     for x in range(nValues):
112                         lineValue = file.readline().rstrip('\n')
113                         constraint.addValue(lineValue.split())
114                     if nConstParsed + 1 < nConst:
115                         self.fileOutSPAQRL.write(str(constraint) + "\t\t&& \n")
116                     else:
117                         self.fileOutSPAQRL.write(str(constraint))
118                     nConstParsed += 1
119
120     def writeSelect(self):
121         self.fileOutSPAQRL.write("SELECT ")
122         for _ , value in self.domains.items():
123             self.fileOutSPAQRL.write(value.strSelectVariables())
124         self.fileOutSPAQRL.write("\n")
125
126     def writeWhere(self):
127         self.fileOutSPAQRL.write("WHERE {\n")
128         for key , value in self.domains.items():
129             listVar = value.vars
130             for v in listVar:
131                 self.fileOutSPAQRL.write("\t:" + key + " :values ?" + v + ".\n")
132         self.fileOutSPAQRL.write("\tFILTER (\n")
133
134     def run(self):
135         self.inFileName = input("Enter F2CSP file name:")
136         self.outFileName = input("Enter output file name:")
137         self.fileOutRDF = open(self.outFileName + ".ttl","w+")
138         self.fileOutRDF.write("@prefix : <http://www.w3.org> .\n")
139         self.fileOutRDF.write("@prefix rdf:
        <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .\n\n")
140         self.fileOutSPAQRL = open(self.outFileName + ".rq","w+")
141         self.fileOutSPAQRL.write("PREFIX : <http://www.w3.org>\n")
142         self.fileOutSPAQRL.write("PREFIX rdf:
        <http://www.w3.org/1999/02/22-rdf-syntax-ns#>\n")
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143
144         fileIn = open(self.inFileName, "r")
145         for line in fileIn:
146             if("Domains:" in line):
147                 nDomains = int(fileIn.readline())
148                 for _ in range(nDomains):
149                     currD = fileIn.readline()
150                     d = currD.split()
151                     self.domains[d[0]] = Domain(d[0], int(d[1][0]),int(d[1][-1]))
152             if("Variables:" in line):
153                 nVars = int(fileIn.readline())
154                 for _ in range(nVars):
155                     currV = fileIn.readline()
156                     v = currV.split()
157                     self.domains[v[1]].addVariable(v[0])
158                 self.writeDomains()
159             if("Constraints:" in line):
160                 self.writeSelect()
161                 self.writeWhere()
162                 self.parseConstraints(fileIn,int(fileIn.readline()))
163                 self.fileOutSPAQRL.write("\t)\n")
164                 self.fileOutSPAQRL.write("}")
165         fileIn.close()
166         self.fileOutRDF.close()
167         self.fileOutSPAQRL.close()
168         print("SCRIPT END")
169
170
171
172 scriptRun = MainRun()
173 scriptRun.run()
```