



INDIVIDUAL ASSIGNMENT

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FUNDAMENTALS OF SOFTWARE DEVELOPMENT

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INSTRUCTIONS TO CANDIDATES:

1. Submit your assignment online in MS Teams unless advised otherwise
2. Late submission will be awarded zero (0) unless Extenuating Circumstances (EC) are upheld
3. Cases of plagiarism will be penalized
4. You must obtain at least 50% in each component to pass this module

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INTRODUCTION

Volkswagen Wolfsburg Plan which is one of the automobile manufacturing plant. It produces different models of passenger cars in different places. There are various models that have been producing which are Volkswagen Golf, Volkswagen Golf R04, Volkswagen Golf GTI03 (Enrico, 2018) and many.

Unfortunately, our manufacture was under a poor economic situation and the company had decided to produce a new model of car with a variety of divisions from each and every of the car model to overcome this serious issue. Therefore, the manufacture has been collecting different models of cars storing in three different warehouses. In each of the warehouses, there are five types of parts which are the Gear Box, Clutch, Multi-Cylinder Engine, Air-Cooled Engine and Steering assembling under three different section, engine section, transmission section and body section.

ASSUMPTION

As creating a new model of car, there are five main components only needed. All of the parts are supplied by three various suppliers who are ZF Lenksysteme, Blaupunkt and Volksawgen Group supplying to three warehouses named vGolf, vGolf_R and vGolf_G. The parts in vGolf are Gear Box (GBV1), Clutch (CV2), Multi-Cylinder Engine (MCEV3), Air-Cooled Engine (ACEV4), Steering (SV5) while there are Gear Box_R (GBVR1), Clutch_R (CVR2), Multi-Cylinder_R Engine (MCEVR3), Air-Cooled_R Engine (ACEVR4) and Steering_R (SVR5) in vGolf_R. Lastly, vGolf_G contained Gear Box_G (GBVG1), Clutch_G (CV2), Multi-Cylinder_G Engine (MCEVG3), Air-Cooled_G Engine (ACEVG4) and Steering_G (SVG5). Thus, all the quantities including those have been collecting and new parts supplied by suppliers are recording in the program.

Design of Program

Pseudocode

Ware houses

```
FUNCTION firstWarehouse ()  
    DECLARE vGolf as empty ARRAY  
    LOOP i FROM 1 TO 5 START 1  
        DECLARE section as empty ARRAY  
        Print "Enter Part's ID : "  
        Read partID  
        Print "Enter Part : "  
        Read part  
        Print "Enter Amount : "  
        Read amount  
        Append partID to section  
        Append part to section  
        Append amount to section  
  
        Append section to vGolf  
        Sort vGolf  
        Print "New Line"  
    ENDLOOP  
  
    OPEN 'vGolf.txt' as vGolffile in WRITE MODE  
    FOR section IN vGolf  
        FOR item IN section  
            WRITE item to vGolffile  
            WRITE tab to vGolffile  
            WRITE new line to vGolffile  
        ENDFOR  
    ENDFOR  
    CLOSE vGolf.txt  
ENDFUNCTION # return vGolf  
  
FUNCTION thridWarehouse ()  
    DECLARE vGolf_G as empty ARRAY  
    LOOP i FROM 1 TO 5 START 1  
        DECLARE section as empty ARRAY  
        Print "Enter Part's ID : "  
        Read partID  
        Print "Enter Part : "  
        Read part  
        Print "Enter Amount : "  
        Read amount  
        Append partID to section  
        Append part to section  
        Append amount to section  
  
        Append section in vGolf_G  
        Sort vGolf_G  
        Print "New Line"  
    ENDLOOP  
  
    OPEN 'vGolf_G.txt' as vGolf_Gfile in WRITE MODE  
    FOR section IN vGolf_G  
        FOR item IN section  
            WRITE item to vGolf_Gfile  
            WRITE tab to vGolf_Gfile  
            WRITE new line to vGolf_Gfile  
        ENDFOR  
    ENDFOR  
    CLOSE vGolf_Gfile  
ENDFUNCTION # return vGolf_G  
  
FUNCTION secondWarehouse ()  
    DECLARE vGolf_R as empty ARRAY  
    LOOP i FROM 1 TO 5 START 1  
        DECLARE section as empty ARRAY  
        Print "Enter Part's ID : "  
        Read partID  
        Print "Enter Part : "  
        Read part  
        Print "Enter Amount : "  
        Read amount  
        Append partID to section  
        Append part to section  
        Append amount to section  
  
        Append section to vGolf_R  
        Sort vGolf_R  
        Print "New Line"  
    ENDLOOP  
  
    OPEN 'vGolf_R.txt' as vGolf_Rfile in WRITE MODE  
    FOR section IN vGolf_R  
        FOR item IN section  
            WRITE item to vGolf_Rfile  
            WRITE tab to vGolf_Rfile  
            WRITE new line to vGolf_Rfile  
        ENDFOR  
    ENDFOR  
    CLOSE vGolf_Rfile  
ENDFUNCTION #return vGolf_R
```

Figure 1

Categorising Parts to Section

```

#####
Transmission Section

FUNCTION transmissionSection()
OPEN 'vGolf.txt' as transmission_File in READ MODE
FOR line IN transmission_File
IF line.startsWith('GBV1') OR line.startsWith ('gbvl') THEN
    OPEN 'Transmission_Section.txt' as transmission_File in WRITE MODE
    WRITE line to transmission_File
    WRITE new line to transmission_File
    WRITE new line to transmission_File
    CLOSE transmission_File
Print (line)
ENDIF
ENDFOR
CLOSE transmission_File.close()

OPEN 'vGolf.txt' as transmission_File in READ MODE
FOR line IN transmission_File
IF line.startsWith('CV2') OR line.startsWith('cv2') THEN
    OPEN 'Transmission_Section.txt' as transmission_File in APPEND MODE
    WRITE line to transmission_File
    WRITE new line to transmission_File
    WRITE new line to transmission_File
    CLOSE transmission_File
Print (line)
ENDIF
ENDFOR
CLOSE transmission_File.close()

OPEN 'vGolf_R.txt' as transmission_File in READ MODE
FOR line IN transmission_File
IF line.startsWith('GBVR1') OR line.startsWith('gbvr1') THEN
    OPEN 'Transmission_Section.txt' as transmission_File in APPEND MODE
    WRITE line to transmission_File
    WRITE new line to transmission_File
    WRITE new line to transmission_File
    CLOSE transmission_File
Print (line)
ENDIF
ENDFOR
CLOSE transmission_File.close()

OPEN 'vGolf_R.txt' as transmission_File in READ MODE
FOR line IN transmission_File
IF line.startsWith('CVR2') OR line.startsWith('cvr2') THEN
    OPEN 'Transmission_Section.txt' as transmission_File in APPEND MODE
    WRITE line to transmission_File
    WRITE new line to transmission_File
    WRITE new line to transmission_File
    CLOSE transmission_File
Print (line)
ENDIF
ENDFOR
CLOSE transmission_File.close()

OPEN 'vGolf_G.txt' as transmission_File in READ MODE
FOR line IN transmission_File
IF line.startsWith('GBVG1') OR line.startsWith ('gbvg1') THEN
    OPEN 'Transmission_Section.txt' as transmission_File in APPEND MODE
    WRITE line to transmission_File
    WRITE new line to transmission_File
    WRITE new line to transmission_File
    CLOSE transmission_File
Print (line)
ENDIF
ENDFOR
CLOSE transmission_File.close()

OPEN 'vGolf_G.txt' as transmission_File in READ MODE
FOR line IN transmission_File
IF line.startsWith('CVG2') OR line.startsWith('cvg2') THEN
    OPEN 'Transmission_Section.txt' as transmission_File in APPEND MODE
    WRITE line to transmission_File
    WRITE new line to transmission_File
    WRITE new line to transmission_File
    CLOSE transmission_File
Print (line)
ENDIF
ENDFOR
CLOSE transmission_File.close()
ENDFUNCTION

```

Figure 2

```

FUNCTION engineSection()
  OPEN 'vGolf.txt' as engineSection_File in READ MODE
  FOR line IN engineSection_File
    IF line.startsWith('MCEV3') OR line.startsWith('mcev3') THEN
      OPEN 'Engine.Section.txt' as engineSection_File in WRITE MODE
      WRITE line to engineSection_File
      WRITE new line to engineSection_File
      WRITE new line to engineSection_File
      CLOSE engineSection_File
    Print (line)
    ENDIF
  ENDFOR
  CLOSE engineSection_File

  OPEN 'vGolf.txt' as engineSection_File in READ MODE
  FOR line IN engineSection_File
    IF line.startsWith('ACEV4') OR line.startsWith ('acev4') THEN
      OPEN 'Engine.Section.txt' as engineSection_File in APPEND MODE
      WRITE line to engineSection_File
      WRITE new line to engineSection_File
      WRITE new line to engineSection_File
      CLOSE engineSection_File
    Print (line)
    ENDIF
  ENDFOR
  CLOSE engineSection_File

  OPEN 'vGolf_R.txt' as engineSection_File in READ MODE
  FOR line IN engineSection_File
    IF line.startsWith('MCEVR3') OR line.startsWith ('mcdrv3') THEN
      OPEN 'Engine.Section.txt' as engineSection_File in APPEND MODE
      WRITE line to engineSection_File
      WRITE new line to engineSection_File
      WRITE new line to engineSection_File
      CLOSE engineSection_File
    Print (line)
    ENDIF
  ENDFOR
  CLOSE engineSection_File

  OPEN 'vGolf_R.txt' as engineSection_File in READ MODE
  FOR line IN engineSection_File
    IF line.startsWith('ACEVR4') OR line.startsWith ('acevr4') THEN
      OPEN 'Engine.Section.txt' as engineSection_File in APPEND MODE
      WRITE line to engineSection_File
      WRITE new line to engineSection_File
      WRITE new line to engineSection_File
      CLOSE engineSection_File
    Print (line)
    ENDIF
  ENDFOR
  CLOSE engineSection_File

  OPEN 'vGolf_G.txt' as engineSection_File in READ MODE
  FOR line IN engineSection_File
    IF line.startsWith('MCEVG3') OR line.startsWith ('mcdrv3') THEN
      OPEN 'Engine.Section.txt' as engineSection_File in APPEND MODE
      WRITE line to engineSection_File
      WRITE new line to engineSection_File
      WRITE new line to engineSection_File
      CLOSE engineSection_File
    Print (line)
    ENDIF
  ENDFOR
  CLOSE engineSection_File

  OPEN 'vGolf_G.txt' as engineSection_File in READ MODE
  FOR line IN engineSection_File
    IF line.startsWith('ACEVG4') OR line.startsWith ('acevg4') THEN
      OPEN 'Engine.Section.txt' as engineSection_File in APPEND MODE
      WRITE line to engineSection_File
      WRITE new line to engineSection_File
      WRITE new line to engineSection_File
      CLOSE engineSection_File
    Print (line)
    ENDIF
  ENDFOR
  CLOSE engineSection_File
ENDFUNCTION

```

Figure 3

```

### Body Section

FUNCTION bodySection ()
    OPEN 'vGolf.txt' as bodySection_File in READ MODE
    FOR line IN bodySection_File
        IF line.startswith ('SV5') OR line.startswith('sv5') THEN
            OPEN 'Body_Section.txt' as bodySection_File in WRITE MODE
            WRITE line to bodySection_File
            WRITE new line to bodySection_File
            WRITE new line to bodySection_File
            CLOSE bodySection_File
            Print(line)
        ENDIF
    ENDFOR
    CLOSE bodySection_File

    OPEN 'vGolf_R.txt' as bodySection_File in READ MODE
    FOR line IN bodySection_File
        IF line.startswith ('SVR5') OR line.startswith ('svr5') THEN
            OPEN 'Body_Section.txt' as bodySection_File in APPEND MODE
            WRITE line to bodySection_File
            WRITE new line to bodySection_File
            WRITE new line to bodySection_File
            CLOSE bodySection_File
            Print (line)
        ENDIF
    ENDFOR
    CLOSE bodySection_File

    OPEN 'vGolf_G.txt' as bodySection_File in READ MODE
    FOR line IN bodySection_File
        IF line.startswith ('SVG5') OR line.startswith ('svg5') THEN
            OPEN 'Body_Section.txt' as bodySection_File in APPEND MODE
            WRITE line to bodySection_File
            WRITE new line to bodySection_File
            WRITE new line to bodySection_File
            CLOSE bodySection_File
            Print(line)
        ENDIF
    ENDFOR
    CLOSE bodySection_File
ENDFUNCTION

```

Figure 4

Update Part's Amount

```

FUNCTION updateAirCooledEngine()

Print "Enter Air-Cooled Engine Amount : "
Read updateAirCooledEngine

OPEN 'vGolf.txt' as vGolffile in READ MODE
CONVERT data to READ vGolffile in READLINES MODE
DECLARE newData as empty ARRAY
LOOP line IN data
    REMOVE spaces from RIGHT of line
    newLine = line.split("\t")
    IF newLine [0] == 'ACEV4' THEN
        newLine [2] = updateAirCooledEngine
    Append newLine to newData
    Print "line "
    ENDIF
ENDLOOP
CLOSE vGolffile

OPEN 'vGolf.txt' as vGolffile in WRITE MODE
FOR data IN newData
    FOR item IN data
        WRITE item to vGolffile
        WRTIE tab to vGolffile
        WRITE new line to vGolffile
    ENDLOOP
CLOSE vGolffile
ENDLOOP
ENDFUNCTION

```

```

FUNCTION updateMultiCylinderEngine()

Print "Enter Multi-Cylinder Engine Amount : "
Read updateMultiCylinderEngine

OPEN 'vGolf.txt' as vGolffile in READ MODE
CONVERT data to READ vGolffile in READLINES MODE
DECLARE newData as empty ARRAY
LOOP line IN data
    REMOVE spaces from RIGHT of line
    newLine = line.split("\t")
    IF newLine [0] == 'MCEV3' THEN
        newLine [2] = updateMultiCylinderEngine
    Append newLine to newData
    Print " line "
    ENDIF
ENDLOOP
CLOSE vGolffile

OPEN 'vGolf.txt' as vGolffile in WRITE MODE
FOR data IN newData
    FOR item IN data
        WRITE item to vGolffile
        WRTIE tab to vGolffile
        WRITE new line to vGolffile
    ENDLOOP
CLOSE vGolffile
ENDLOOP
ENDFUNCTION

```

```

FUNCTION updateSteering()

Print "Enter Steering Amount : "
Read updateSteering

OPEN 'vGolf.txt' as vGolffile in READ MODE
CONVERT data to READ vGolffile in READLINE
DECLARE newData as empty ARRAY
LOOP line IN data
    REMOVE spaces from RIGHT of line
    newLine = line.split("\t")
    IF newLine [0] == 'SV5' THEN
        newLine [2] = updateSteering
    Append newLine to newData
    Print " line "
    ENDIF
ENDLOOP
CLOSE vGolffile

OPEN 'vGolf.txt' as vGolffile in WRITE MOD
FOR data IN newData
    FOR item IN data
        WRITE item to vGolffile
        WRTIE tab to vGolffile
        WRITE new line to vGolffile
    ENDLOOP
CLOSE vGolffile
ENDLOOP
ENDFUNCTION

```

```

FUNCTION updateClutch ()

Print "Enter Clutch Amount : ")
Read updateClutch

OPEN 'vGolf.txt' as vGolffile in READ MODE
CONVERT data to READ vGolffile in READLINES MODE
DECLARE newData as empty ARRAY
LOOP line IN data
    REMOVE spaces from RIGHT of line
    newLine = line.split("\t")
    IF newLine [0] == 'CV2' THEN
        newLine [2] = updateClutch
    Append newLine to newData
    Print "line"
    ENDIF
ENDLOOP
CLOSE vGolffile

OPEN 'vGolf.txt' as vGolffile in WRITE MODE
FOR data IN newData
    FOR item IN data
        WRITE item to vGolffile
        WRTIE tab to vGolffile
        WRITE new line to vGolffile
    ENDLOOP
CLOSE vGolffile
ENDLOOP
ENDFUNCTION

```

Figure 5

```

FUNCTION updateGearBox()      # Update GEAR BOX in firstWarehouse (vGolf)
Print "Enter Gear Box Amount : "
Read updateGearBox

OPEN 'vGolf.txt' as vGolffile in READ MODE
CONVERT data to READ vGolffile in READLINES MODE
DECLARE newData as empty ARRAY
LOOP line IN data
    REMOVE spaces from RIGHT of line
    split tab of line of newLine
    IF newLine [0] == 'GBV1' THEN
        newLine [2] = updateGearBox
        Append newLine to newData
        Print "line"
        ENDIF
    ENDLOOP
CLOSE vGolffile

OPEN 'vGolf.txt' as vGolffile in WRITE MODE
FOR data IN newData
    FOR item IN data
        WRITE item to vGolffile
        WRITE tab to vGolffile
        WRITE new line to vGolffile
    ENDLOOP
CLOSE vGolffile
ENDLOOP
ENDFUNCTION

FUNCTION updateClutch_R ()  # Updat Clutch part in secondWarehouse
Print "Enter Clutch_R Amount : "
Read updateClutch_R

OPEN 'vGolf_R.txt' as vGolf_Rfile in READ MODE
CONVERT data to READ vGolf_Rfile in READLINES MODE
DECLARE newData as empty ARRAY
LOOP line IN data
    REMOVE spaces from RIGHT of line
    newLine = line.split("\t")
    IF newLine [0] == 'CVR2' THEN
        newLine [2] == updateClutch_R
        Append newLine to newData
        Print "line"
    ENDIF
    ENDLOOP
CLOSE vGolf_Rfile

OPEN 'vGolf_R.txt' as vGolf_Rfile in WRITE MODE
FOR data IN newData
    FOR item IN data
        WRITE item to vGolf_Rfile
        WRITE tab to vGolf_Rfile
        WRITE new line to vGolf_Rfile
    ENDLOOP
CLOSE vGolf_Rfile
ENDLOOP
ENDFUNCTION

FUNCTION updateGearBox_R()
Print "Enter Gear Box_R Amount : "
Read updateGearBox_R

OPEN 'vGolf_R.txt' as vGolf_Rfile in READ MODE
CONVERT data to READ vGolf_Rfile in READLINES MC
DECLARE newData as empty ARRAY
LOOP line IN data
    REMOVE spaces from RIGHT of line
    newLine = line.split("\t")
    IF newLine [0] == 'GBVR1' THEN
        newLine [2] == updateGearBox_R
        Append newLine to newData
        Print " line"
        ENDIF
    ENDLOOP
CLOSE vGolf_Rfile

OPEN 'vGolf_R.txt' as vGolf_Rfile in WRITE MODE
FOR data IN newData
    FOR item IN data
        WRITE item to vGolf_Rfile
        WRITE tab to vGolf_Rfile
        WRITE new line to vGolf_Rfile
    ENDLOOP
CLOSE vGolf_Rfile
ENDLOOP
ENDFUNCTION

FUNCTION updateMultiCylinderEngine_R()
Print "Enter Multi-Cylinder Engine_R Amount : "
Read updateMultiCylinderEngine_R

OPEN 'vGolf_R.txt' as vGolf_Rfile in READ MODE
CONVERT data to READ vGolf_Rfile in READLINES MODE
DECLARE newData as empty ARRAY
LOOP line IN data
    REMOVE spaces from RIGHT of line
    newLine = line.split("\t")
    IF newLine [0] == 'MCEVR3' THEN
        newLine [2] = updateMultiCylinderEngine_R
        Append newLine to newData
        Print "line"
        ENDIF
    ENDLOOP
CLOSE vGolf_Rfile

OPEN 'vGolf_R.txt' as vGolf_Rfile in WRITE MODE
FOR data IN newData
    FOR item IN data
        WRITE item to vGolf_Rfile
        WRITE tab to vGolf_Rfile
        WRITE new line to vGolf_Rfile
    ENDLOOP
CLOSE vGolf_Rfile
ENDLOOP
ENDFUNCTION

```

```

FUNCTION updateSteering_R()
Print "Enter Steering_R Amount : "
Read updateSteering_R

OPEN 'vGolf_R.txt' as vGolf_Rfile in READ MODE
CONVERT data to READ vGolf_Rfile in READLINES MODE
DECLARE newData as empty ARRAY
LOOP line IN data
    REMOVE spaces from RIGHT of line
    newLine = line.split("\t")
    IF newLine [0] == 'SVR5' THEN
        newLine [2] = updateSteering_R
    Append newLine to newData
    Print "line"
    ENDIF
ENDLOOP
CLOSE vGolf_Rfile

OPEN 'vGolf_R.txt' as vGolf_Rfile in WRITE MODE
FOR data IN newData
    FOR item IN data
        WRITE item to vGolf_Rfile
        WRITE tab to vGolf_Rfile
    WRITE new line to vGolf_Rfile
    ENDLOOP
CLOSE vGolf_Rfile
ENDLOOP
ENDFUNCTION

FUNCTION updateAirCooledEngine_R()
Print "Enter Air-Cooled Engine_R Amount : "
Read updateAirCooledEngine_R

OPEN 'vGolf_R.txt' as vGolf_Rfile in READ MODE
CONVERT data to READ vGolf_Rfile in READLINES MODE
DECLARE newData as empty ARRAY
LOOP line IN data
    REMOVE spaces from RIGHT of line
    newLine = line.split("\t")
    IF newLine [0] == 'ACEVR4' THEN
        newLine [2] = updateMulti-CylinderEngine_R
    Append newLine to newData
    Print "line"
    ENDIF
ENDLOOP
CLOSE vGolf_Rfile

OPEN 'vGolf_R.txt' as vGolf_Rfile in WRITE MODE
FOR data IN newData
    FOR item IN data
        WRITE item to vGolf_Rfile
        WRITE tab to vGolf_Rfile
    WRITE new line to vGolf_Rfile
    ENDLOOP
CLOSE vGolf_Rfile
ENDLOOP
ENDFUNCTION

FUNCTION updateSteering_G()
Print "Enter Steering_G Amount : "
Read updateSteering_G

OPEN 'vGolf_G.txt' as vGolf_Gfile in READ MODE
CONVERT data to READ vGolf_Gfile in READLINES MODE
DECLARE newData as empty ARRAY
LOOP line IN data
    REMOVE spaces from RIGHT of line
    newLine = line.line.split("\t")
    IF newLine [0] == 'SVG5' THEN
        newLine [2] = updateSteering_G
    Append newLine to newData
    Print "line"
    ENDIF
ENDLOOP
CLOSE vGolf_Gfile

OPEN 'vGolf_G.txt' as vGolf_Gfile in WRITE MODE
FOR data IN newData
    FOR item IN data
        WRITE item to vGolf_Gfile
        WRITE tab to vGolf_Gfile
    WRITE new line to vGolf_Gfile
    ENDLOOP
CLOSE vGolf_Gfile
ENDLOOP
ENDFUNCTION

##UPDATE FUNCTION third Warehouse (vGolf_G)

FUNCTION updateGearBox_G()
Print "Enter Gear Box_G Amount : "
Read updateGearBox_G

OPEN 'vGolf_G.txt' as vGolf_Gfile in READ MODE
CONVERT data to READ vGolf_Gfile in READLINES MODE
DECLARE newData as empty ARRAY
LOOP line IN data
    REMOVE spaces from RIGHT of line
    newLine = line.split("\t")
    IF newLine [0] == 'GBVG1' THEN
        newLine [2] = updateGearBox_G
    Append newLine to newData
    Print "line"
    ENDIF
ENDLOOP
CLOSE vGolf_Gfile

OPEN 'vGolf_G.txt' as vGolf_Gfile in WRITE MODE
FOR data IN newData
    FOR item IN data
        WRITE item to vGolf_Gfile
        WRITE tab to vGolf_Gfile
    WRITE new line to vGolf_Gfile
    ENDLOOP
CLOSE vGolf_Gfile
ENDLOOP
ENDFUNCTION

```

Figure 7

```

FUNCTION updateClutch_G ()
    Print "Enter Clutch_G Amount : "
    Read updateClutch_G

    OPEN 'vGolf_G.txt' as vGolf_Gfile in READ MODE
    CONVERT data to READ vGolf_Gfile in READLINES MODE
    DECLARE newData as empty ARRAY
    LOOP line IN data
        REMOVE spaces from RIGHT of line
        newLine = line.split("\t")
        IF newLine [0] == 'CVG2' THEN
            | newLine [2] == updateClutch_G
            Append newLine to newData
            Print "line"
        ENDIF
    ENDLOOP
    CLOSE vGolf_Gfile

    OPEN 'vGolf_G.txt' as vGolf_Gfile in WRITE MODE
    FOR data IN newData
        FOR item IN data
            | WRITE item to vGolf_Gfile
            | WRITE tab to vGolf_Gfile
            | WRITE new line to vGolf_Gfile
        ENDLOOP
    CLOSE vGolf_Gfile
    ENDOLOOP
ENDFUNCTION

FUNCTION updateMultiCylinderEngine_G()
    Print "Enter Multi-Cylinder Engine_G Amount : "
    Read updateMultiCylinderEngine_G

    OPEN 'vGolf_G.txt' as vGolf_Gfile in READ MODE
    CONVERT data to READ vGolf_Gfile in READLINES MODE
    DECLARE newData as empty ARRAY
    LOOP line IN data
        REMOVE spaces from RIGHT of line
        newLine = line.split("\t")
        IF newLine [0] == 'MCEVG3' THEN
            | newLine [2] = updateMultiCylinderEngine_G
            Append newLine to newData
            Print "line"
        ENDIF
    ENDLOOP
    CLOSE vGolf_Gfile

    OPEN 'vGolf_G.txt' as vGolf_Gfile in WRITE MODE
    FOR data IN newData
        FOR item IN data
            | WRITE item to vGolf_Gfile
            | WRITE tab to vGolf_Gfile
            | WRITE new line to vGolf_Gfile
        ENDLOOP
    CLOSE vGolf_Gfile
    ENDOLOOP
ENDFUNCTION

FUNCTION updateAirCooledEngine_G()
    Print "Enter Air-Cooled Engine_G Amount : "
    Read updateAirCooledEngine_G

    OPEN 'vGolf_G.txt' as vGolf_Gfile in READ MODE
    CONVERT data to READ vGolf_Gfile in READLINES MODE
    DECLARE newData as empty ARRAY
    LOOP line IN data
        REMOVE spaces from RIGHT of line
        newLine = line.split("\t")
        IF newLine [0] == 'ACEVG4' THEN
            | newLine [2] = updateMultiCylinderEngine_G
            Append newLine to newData
            Print "line"
        ENDIF
    ENDLOOP
    CLOSE vGolf_Gfile

    OPEN 'vGolf_G.txt' as vGolf_Gfile in WRITE MODE
    FOR data IN newData
        FOR item IN data
            | WRITE item to vGolf_Gfile
            | WRITE tab to vGolf_Gfile
            | WRITE new line to vGolf_Gfile
        ENDLOOP
    CLOSE vGolf_Gfile
    ENDOLOOP
ENDFUNCTION

```

Figure 8

Supplier Info

```
FUNCTION supplierInfo()          ##### Function of supplier
    DECLARE supplierList as empty ARRAY
    FOR i FROM 1 TO 3 START 1

        DECLARE supplies as empty ARRAY
        Print " Enter Name "
        Read name
        Append 'Name : ' to supplies
        Append name to supplies
        Print " Enter Phone Number : "
        Read number
        Append 'Phone Number : ' to supplies
        Append number to supplies
        Print " Enter Part's ID : "
        Read partID
        Append 'Supplied Part's ID to supplies
        Append partID to supplies
        Print "Enter Supplied Amount "
        Read numberSupplied
        Append 'Total Supplied Number : ' to supplies
        Append numberSupplied to supplies

        Append supplies to supplierList

    OPEN 'Supplier.txt' as supplier_File in WRITE MODE
    FOR supplies IN supplierList
        FOR item IN supplies
            WRITE item to supplier_File
            WRITE tab to supplier_File
            WRITE new line to supplier_File
        ENDFOR
    ENDFOR
    CLOSE supplier_File
ENDFUNCTION

##### Record of supplying more than one part from suppliers

FUNCTION supplierMoreOne ()
    Print " Enter 1 to record , 0 to END : "
    Read inputs
    DOWHILE TRUE
        IF inputs == 0 THEN
            BREAK
        ELSE
            DECLARE supplied as empty ARRAY
            DECLARE supplies as empty ARRAY

            Print ("Enter Supplier Name : ")
            Read supplier
            Print ("Enter Supplied Part's ID : ")
            Read suppliedPartID

            Append supplier to supplies
            Append suppliedPartID to supplies

            Append supplies to supplied
        ENDIF
        Print " Enter 1 to record , 0 to END : "
        Read inputs
    ENDDOWHILE

    OPEN 'Supplied_More_1.txt' as supplyMore_File in WRITE MODE
    FOR supplies IN supplied
        FOR item IN supplies
            WRITE item to supplyMore_File
            WRITE tab to supplyMore_File
            WRITE new line to supplyMore_File
        ENDFOR
    ENDFOR
    CLOSE supplyMore_File
ENDFUNCTION
```

Figure 9

Print Warehouse Parts Record

```
# function of Print Warehouse Record

FUNCTION printvGolfRecord ()
    OPEN 'vGolf.txt' as vGolffile in READ MODE
    FOR line in vGolffile
        REMOVE spaces from RIGHT of line
        Print (line, "\n")
    ENDFOR
    CLOSE vGolffile
ENDFUNCTION

FUNCTION printvGolf_RRecord ()
    OPEN 'vGolf_R.txt' as vGolf_Rfile in READ MODE
    FOR line IN vGolf_Rfile
        REMOVE spaces from RIGHT of line
        Print (line, "\n")
    ENDFOR
    CLOSE vGolf_Rfile
ENDFUNCTION

FUNCTION printvGolf_GRecord ()
    OPEN 'vGolf_G.txt' as vGolf_Gfile in READ MODE
    FOR line IN vGolf_Gfile
        REMOVE spaces from RIGHT of line
        Print (line, "\n")
    ENDFOR
    CLOSE vGolf_Gfile
ENDFUNCTION

FUNCTION printSupplierMoreOne()
    OPEN 'Supplier_More_1.txt' as supplier_File in READ MODE
    FOR line IN supplier_File
        REMOVE spaces from RIGHT of line
        Print (line, "\n")
    ENDFOR
    CLOSE supplier_File
ENDFUNCTION
```

Figure 10

Print Sections' Parts and Amount

```
#### Print Each Section 's Parts and Amount

FUNCTION printBodySection ()
    OPEN 'Body_Section.txt' as bodyFile in READ MODE
    FOR line IN bodyFile
        REMOVE space from RIGHT of line
        Print (line)
    ENDFOR
    CLOSE bodyFile
ENDFUNCTION

FUNCTION printEngineSection ()
    OPEN 'Engine_Section.txt' as engineFile in READ MODE
    FOR line IN engineFile
        REMOVE space from RIGHT of line
        Print (line)
    ENDFOR
    CLOSE engineFile
ENDFUNCTION

FUNCTION printTransmissionSection ()
    OPEN 'Transmission.txt' as transmissionFile in READ MODE
    FOR line IN transmissionFile
        REMOVE space from RIGHT of line
        Print (line)
    ENDFOR
    CLOSE transmissionFile
ENDFUNCTION
```

Print ITEM which is below 10

Figure 11

```
##### Function of Printing parts below 10 from each warehouse

FUNCTION itemBelow_vGolf_()
    OPEN 'vGolf.txt' as vGolffile in READ MODE
    FOR line IN vGolffile
        REMOVE spaces from RIGHT of line
        IF line [-2:] < '10' THEN
            Print (line)
        ENDIF
    ENDFOR
    CLOSE vGolffile
ENDFUNCTION

FUNCTION itemBelow_vGolf_R_()
    OPEN 'vGolf_R.txt' as vGolf_Rfile in READ MODE
    FOR line in vGolf_Rfile
        REMOVE spaces from RIGHT of line
        IF line [-2:] < '10' THEN
            Print (line)
        ENDIF
    ENDFOR
    CLOSE vGolf_Rfile
ENDFUNCTION

FUNCTION itemBelow_vGolf_G_()
    OPEN 'vGolf_G.txt' as vGolf_Gfile in READ MODE
    FOR line in vGolf_Gfile
        REMOVE spaces from RIGHT of line
        IF line [-2:] < '10' THEN
            Print (line)
        ENDIF
    ENDFOR
    CLOSE vGolf_Gfile
ENDFUNCTION
```

Figure 12

Search

```
##### SEARCH FUNCTION

FUNCTION searchvGolf ()           # search item in first warehouse
TRY
    OPEN 'vGolf.txt' as vGolffile in READ MODE
EXCEPT
    Print "File cannot be opened !"
    exit()

Print "Type what you want to search : "
Read search
FOR line in vGolffile
    REMOVE spaces from RIGHT of line
    IF NOT search.lower() IN line.lower() THEN
        CONTINUE
    Print(line)
    ENDIF
ENDFOR
CLOSE vGolffile
ENDFUNCTION

FUNCTION searchvGolf_R ()          # search item in second warehouse
TRY
    OPEN 'vGolf_R.txt' as vGolf_Rfile in READ MODE
EXCEPT
    Print "File cannot be opened !"
    exit()

Print "Type what you want to search : "
Read search
FOR line IN vGolf_Rfile
    REMOVE spaces from RIGHT of line
    IF NOT search.lower () IN line.lower() THEN
        CONTINUE
    Print (line)
    ENDIF
ENDFOR
CLOSE vGolf_Rfile
ENDFUNCTION

FUNCTION searchvGolf_G ()          # search item in third warehouse
TRY
    OPEN 'vGolf_G.txt' as vGolf_Gfile in READ MODE
EXCEPT
    Print "File cannot be opened !"
    exit()

Print "Type what you want to search : "
Read search
FOR line IN vGolf_Gfile
    REMOVE spaces from RIGHT of line
    IF NOT search.lower() IN line.lower() THEN
        CONTINUE
    Print (line)
    ENDIF
ENDFOR
CLOSE vGolf_Gfile
ENDFUNCTION

FUNCTION searchSupplier ()
TRY
    OPEN 'Supplier.txt' as supplier_File in READ MODE
EXCEPT
    Print "File cannot be opened !"
    exit()

Print "Type what you want to search : "
Read search
FOR line IN supplier_File
    REMOVE spaces from RIGHT of line
    IF NOT search.lower() IN line.lower() THEN
        CONTINUE
    Print(line)
    ENDIF
ENDFOR
CLOSE supplier_File
ENDFUNCTION

FUNCTION searchSuppliedMore ()
TRY
    OPEN 'Supplied_More_1.txt' as supplied_File in READ MODE
EXCEPT
    Print "File cannot be opened !"
    exit()

Print " Type what you want to search : "
Read search
FOR line IN supplied_File
    REMOVE spaces from RIGHT of line
    IF NOT search.lower() IN line.lower() THEN
        CONTINUE
    Print (line)
    ENDIF
ENDFOR
CLOSE supplied_File
ENDFUNCTION
```

Figure 13

Increasing Part's Amount

```

FUNCTION newPart_R
Print "Enter 1 to add new Part, 0 to end : "
Read inputs
DOWHILE TRUE
    IF inputs == 0 THEN
        BREAK
    ELSE
        DECLARE section as empty ARRAY
        Print "Enter Part's ID : "
        Read partID
        Print "Enter Part : "
        Read part
        Print "Enter Amount : "
        Read amount
        Append partID to section
        Append part to section
        Append amount to section
        Print "New Line"
        OPEN 'vGolf_R.txt' as vGolf_Rfile in APPEND MODE
        FOR item IN section
            WRITE item to vGolf_Rfile
            WRITE tab to vGolf_Rfile
            WRITE new line to vGolf_Rfile
        ENDFOR
        CLOSE vGolf_Rfile
        Print " Enter 1 to add new Part, 0 to end : "
        Read inputs
    ENDIF
ENDDOWHILE
ENDFUNCTION

### Increase new Parts

FUNCTION newPart
Print "Enter 1 to add new Part, 0 to end : "
Read inputs
DOWHILE TRUE
    IF inputs == 0 THEN
        BREAK
    ELSE
        DECLARE section as empty ARRAY
        Print "Enter Part's ID : "
        Read partID
        Print "Enter Part : "
        Read part
        Print "Enter Amount : "
        Read amount
        Append partID to section
        Append part to section
        Append amount to section
        Print "New Line"
        OPEN 'vGolf.txt' as vGolffile in APPEND MODE
        FOR item IN section
            WRITE item to vGolffile
            WRITE tab to vGolffile
            WRITE new line to vGolffile
        ENDFOR
        CLOSE vGolffile
        Print " Enter 1 to add new Part, 0 to end : "
        Read inputs
    ENDIF
ENDDOWHILE
ENDFUNCTION

FUNCTION newPart_G
Print "Enter 1 to continue add new Part, 0 to end : "
Read inputs
DOWHILE TRUE
    IF inputs == 0 THEN
        BREAK
    ELSE
        DECLARE section as empty ARRAY
        Print "Enter Part's ID : "
        Read partID
        Print "Enter Part : "
        Read part
        Print "Enter Amount : "
        Read amount
        Append partID to section
        Append part to section
        Append amount to section
        Print "New Line"
        OPEN 'vGolf_G.txt' as vGolf_Gfile in APPEND MODE
        FOR item IN section
            WRITE item to vGolf_Gfile
            WRITE tab to vGolf_Gfile
            WRITE new line to vGolf_Gfile
        ENDFOR
        CLOSE vGolf_Gfile
        Print " Enter 1 to add new Part, 0 to end : "
        Read inputs
    ENDIF
ENDDOWHILE
ENDFUNCTION

```

Menu Function

```
FUNCTION menu ()
    Print " WELCOME TO VOLKSWAGEN MANUFACTURE ! "
    Print " Please Choose Your Option "

    Print " 1. Insert Parts To Warehouses "
    Print " "\t", "A. vGolf"
    Print " "\t", "B. vGolf_R"
    Print " "\t", "C. vGolf_G"

    Print " 2. Update Parts and Increase New Parts"
    Print " 3. Supplier Information "
    Print " 4. Insert Suppliers supplied More Than One Part "
    Print " 5. Check Suppliers Supplied Part's Quantity"
    Print " 6. Check Section From Warehouses"
    Print " "\t" "A. Body Section "
    Print " "\t" "B. Engine Section "
    Print " "\t" "C. Transmission Section "

    Print " 7. Print Sections"
    Print " "\t" "A. Body Section "
    Print " "\t" "B. Engine Section "
    Print " "\t" "C. Transmission Section "

    Print " 8. Check The Amount of Parts In Each Warehouse "
    Print " "\t" "A. vGolf "
    Print " "\t" "B. vGolf_R"
    Print " "\t" "C. vGolf_G"

    Print " 9. Check Unefficient Quantity "
    Print " "\t" "A. vGolf "
    Print " "\t" "B. vGolf_R"
    Print " "\t" "C. vGolf_G"

    Print " 10. Search "
    Print " "\t" "A. vGolf "
    Print " "\t" "B. vGolf_R"
    Print " "\t" "C. vGolf_G"
    Print " "\t" "D. Supplier Information "
    Print " "\t" "E. Suppliers Supplied More Than 1 Parts "

    Print " 11. Exit "
```

Figure 14

```

DOWHILE TRUE
    Print " Enter 1 to continue , 0 to end : "
    Read toContinue
    IF toContinue == 0 THEN
        BREAK
        Print " Thank You !! "
    ELSE
        Print " Enter Your Option : "
        Read choice

        IF choice == 1 THEN
            Print "Enter Categories' Alphabet : "
            Read alphabet
            IF alphabet == 'A' or alphabet == 'a' THEN
                firstWarehouse()
            ELIF alphabet == 'B' or alphabet == 'b' THEN
                secondWarehouse()
            ELSE
                thirdWarehouse()
            ENDIF

        ELIF choice == 2 THEN
            menu_0()

        ELIF choice == 3 THEN
            supplierInfo()

        ELIF choice == 4 THEN
            supplierMoreOne()

        ELIF choice == 5 THEN
            printSupplierMoreOne()

        ELIF choice == 6 THEN
            Print "Enter Categories' Alphabet : "
            Read alphabet_2
            IF alphabet_2 == 'A' or alphabet_2 == 'a' THEN
                bodySection()
            ELIF alphabet_2 == 'B' or alphabet_2 == 'b' THEN
                engineSection()
            ELSE
                transmissionSection()
            ENDIF

        ELIF choice == 7 THEN
            Print "Enter Categories' Alphabet : "
            Read alphabet_3
            IF alphabet_3 == 'A' or alphabet_3 == 'a' THEN
                printBodySection()
            ELIF alphabet_3 == 'B' or alphabet_3 == 'b' THEN
                printEngineSection()
            ELSE
                printTransmissionSection()
            ENDIF

        ELIF choice == 8 THEN
            Print " Enter Categories' Alphabet : "
            Read alphabet_4
            IF alphabet_4 == 'A' or alphabet_4 == 'a' THEN
                printvGolfRecord()
            ELIF alphabet_4 == 'B' or alphabet_4 == 'b' THEN
                printvGolf_RRecord()
            ELSE
                printvGolf_GRecord()
            ENDIF

        ELIF choice == 9 THEN
            Print " Enter Categories' Alphabet : "
            Read alphabet_5
            IF alphabet_5 == 'A' or alphabet_5 == 'a' THEN
                itemBelow_vGolf()
            ELIF alphabet_5 == 'B' or alphabet_5 == 'b' THEN
                itemBelow_vGolf_R()
            ELSE
                itemBelow_vGolf_G()
            ENDIF

        ELIF choice == 10 THEN
            Print " Enter Categories' Alphabet : "
            Read alphabet_6
            IF alphabet_6 == 'A' or alphabet_6 == 'a' THEN
                searchvGolf()
            ELIF alphabet_6 == 'B' or alphabet_6 == 'b' THEN
                searchvGolf_R()
            ELIF alphabet_6 == 'C' or alphabet_6 == 'c' THEN
                searchvGolf_G()
            ELIF alphabet_6 == 'D' or alphabet_6 == 'd' THEN
                searchSupplier()
            ELSE
                searchSuppliedMore()
            ENDIF

        ELSE
            Print " Thank You "
        ENDIF
    ENDIF
ENDDOWHILE

ENDFUNCTION MENU

END

```

```

## FUNCTION MENU

FUNCTION menu_0()
    Print " 1. To Update Parts "
    Print " \t", "A. vGolf" "
    Print " \t", "B. vGolf_R" "
    Print " \t", "C. vGolf_G" "

    Print "2. To Add New Parts "
    Print " \t", "A. vGolf" "
    Print " \t", "\t", "a. Gear Box" "
    Print " \t", "\t", "b. Clutch " "
    Print " \t", "\t", "c. Multi-Cyclinder Engine " "
    Print " \t", "\t", "d. Air-Cooled Engine " "
    Print " \t", "\t", "e. Steering " "
    Print " \t", "B. vGolf_R" "
    Print " \t", "\t", "a. Gear Box_R" "
    Print " \t", "\t", "b. Clutch_R " "
    Print " \t", "\t", "c. Multi-Cyclinder_R Engine " "
    Print " \t", "\t", "d. Air-Cooled_R Engine " "
    Print " \t", "\t", "e. Steering_R " "
    Print " \t", "C. vGolf_G" "
    Print " \t", "\t", "a. Gear Box_G" "
    Print " \t", "\t", "b. Clutch_G " "
    Print " \t", "\t", "c. Multi-Cyclinder_G Engine " "
    Print " \t", "\t", "d. Air-Cooled_G Engine " "
    Print " \t", "\t", "e. Steering_G " "

    Print " Enter Your Option : "
    Read choice

    IF choice == 1 THEN
        Print " Enter Which Warehouse :"
        Read alphabet_0
        IF alphabet_0 == 'A' or alphabet_0 == 'a' THEN
            newPart()
        ELIF alphabet_0 == 'B' or alphabet_0 == 'b' THEN
            newPart_R()
        ELSE
            newPart_G()
        ENDIF
    ELSE
        Print "Enter Categories' Alphabet : "
        Read alphabet_1
        IF alphabet_1 == 'A' or alphabet_1 == 'a' THEN
            Print " Enter Part To Update : "
            Read part
            IF part == 'a' or part == 'A' THEN
                updateGearBox()
            ELIF part == 'b' or part == 'B' THEN
                updateClutch()
            ELIF part == 'c' or part == 'C' THEN
                updateMultiCylinderEngine()
            ELIF part == 'd' or part == 'D' THEN
                updateAirCooledEngine ()
            ELSE
                updateSteering ()
            ENDIF
        ELIF alphabet_1 == 'B' or alphabet_1 == 'b' THEN
            Print " Enter Part To Update : "
            Read part
            IF part == 'a' or part == 'A' THEN
                updateGearBox_R()
            ELIF part == 'b' or part == 'B' THEN
                updateClutch_R()
            ELIF part == 'c' or part == 'C' THEN
                updateMultiCylinderEngine_R()
            ELIF part == 'd' or part == 'D' THEN
                updateAirCooledEngine_R ()
            ELSE
                updateSteering_R ()
            ENDIF
    ENDIF
ENDFUNCTION

```

```
    ELSE
        Print " Enter Part To Update : "
        Read part
        IF part == 'a' or part == 'A' THEN
            updateGearBox_G()
        ELIF part == 'b' or part == 'B' THEN
            updateClutch_G()
        ELIF part == 'c' or part == 'C' THEN
            updateMultiCylinderEngine_G()
        ELIF part == 'd' or part == 'D' THEN
            updateAirCooledEngine_G()
        ELSE
            updateSteering_G ()
        ENDIF
    ENDIF
ENDFUNCTION
```

Figure 16

Flow Chart

Warehouses

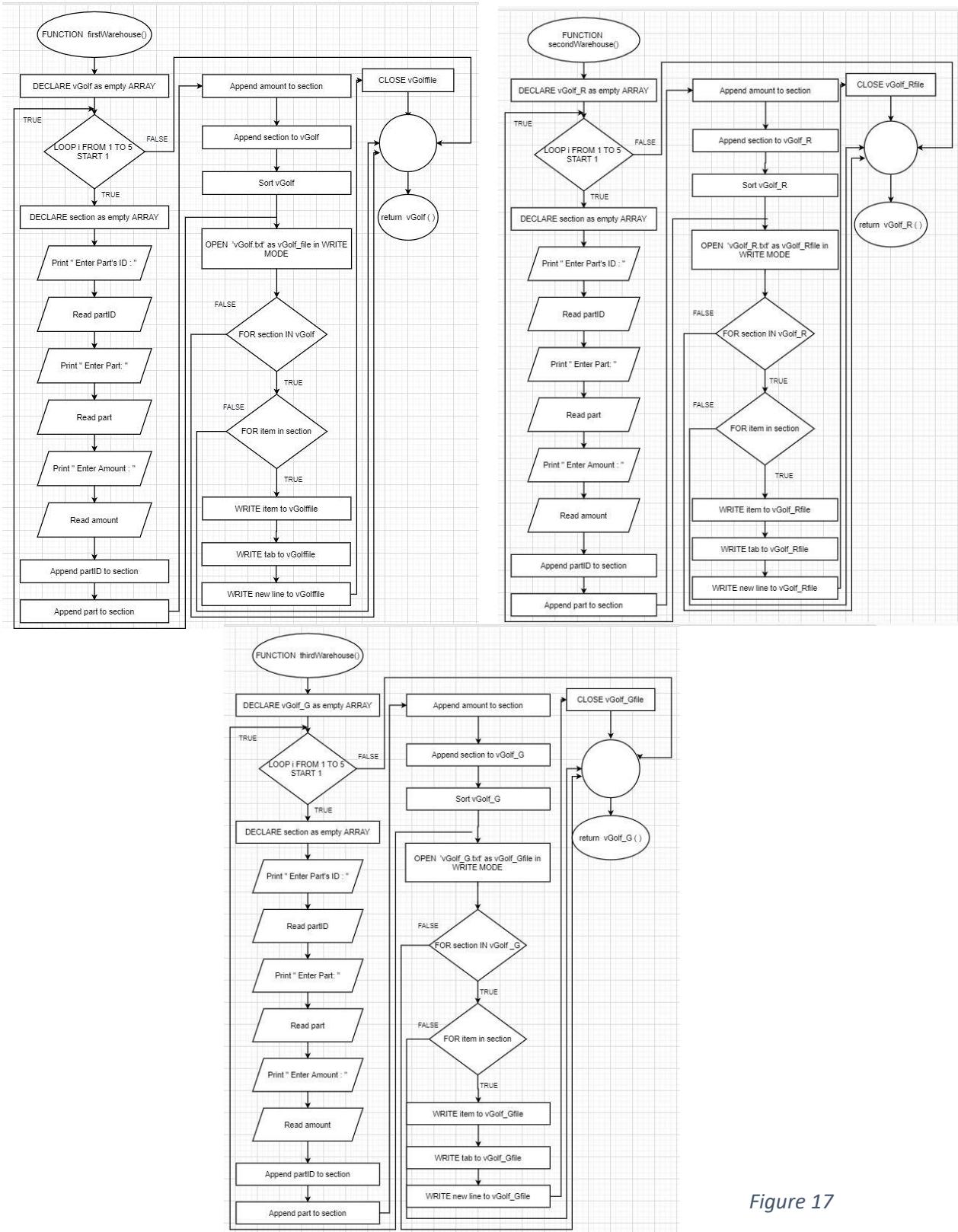
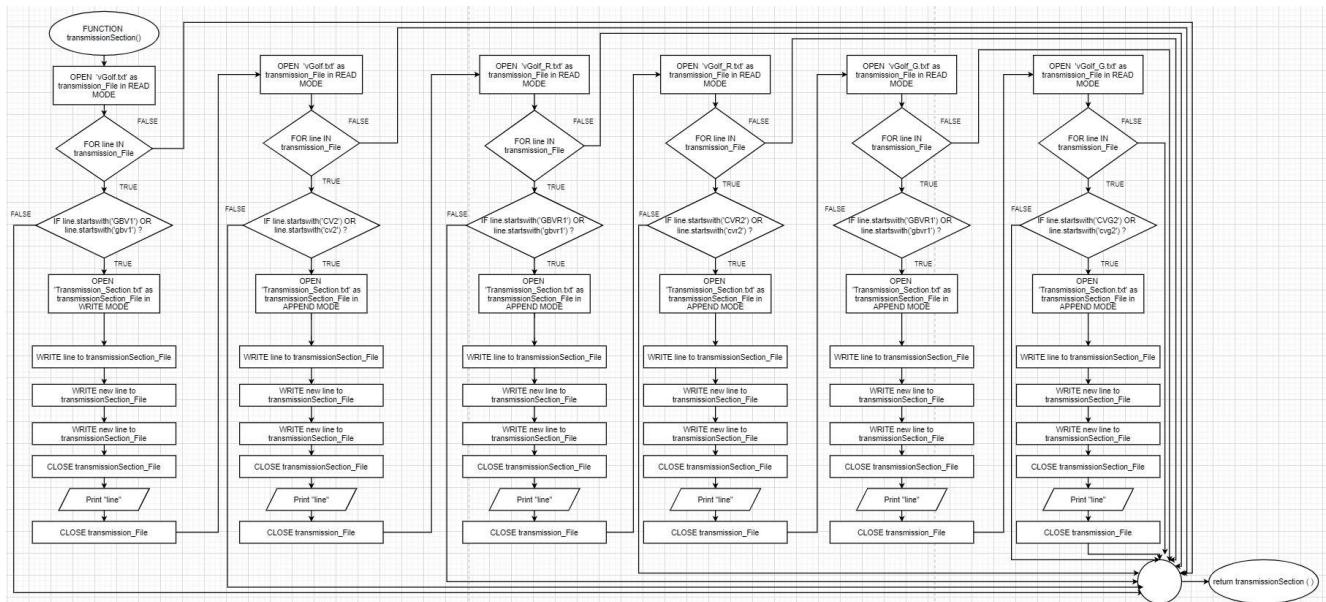
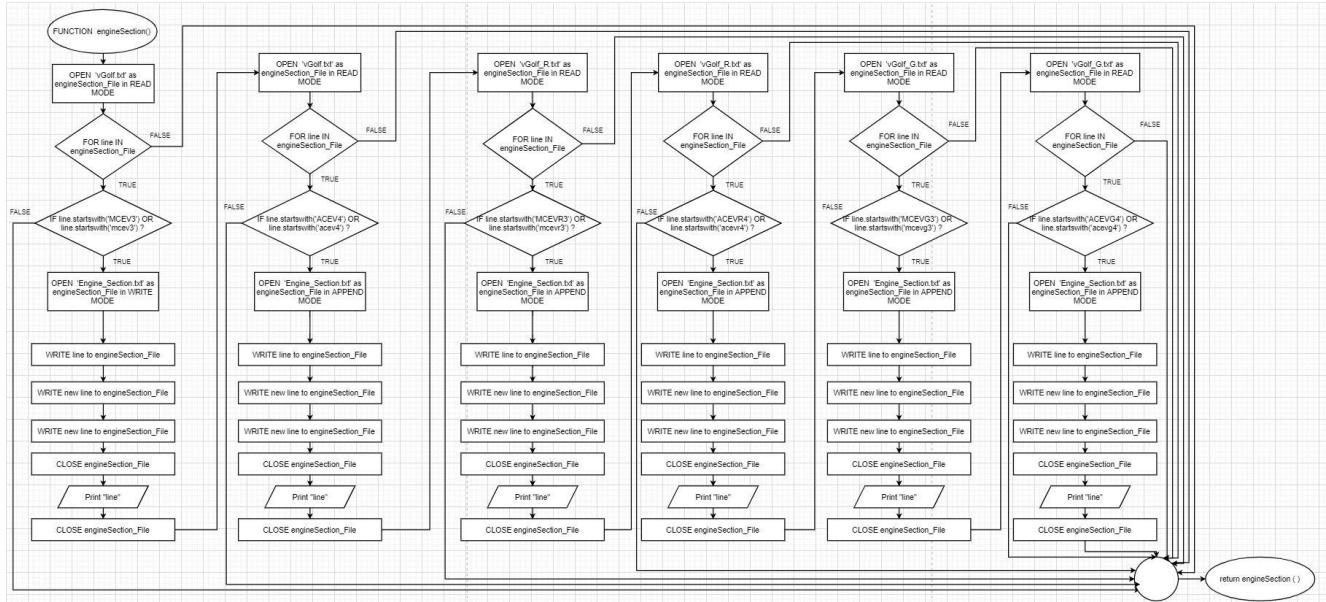


Figure 17

Parts in respective section



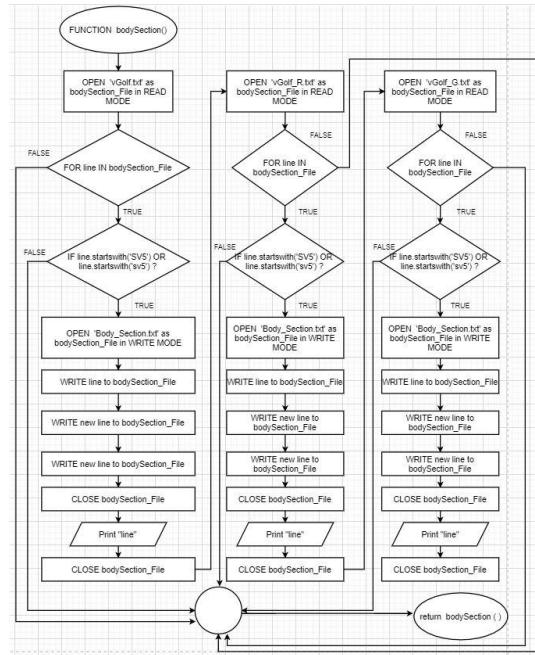
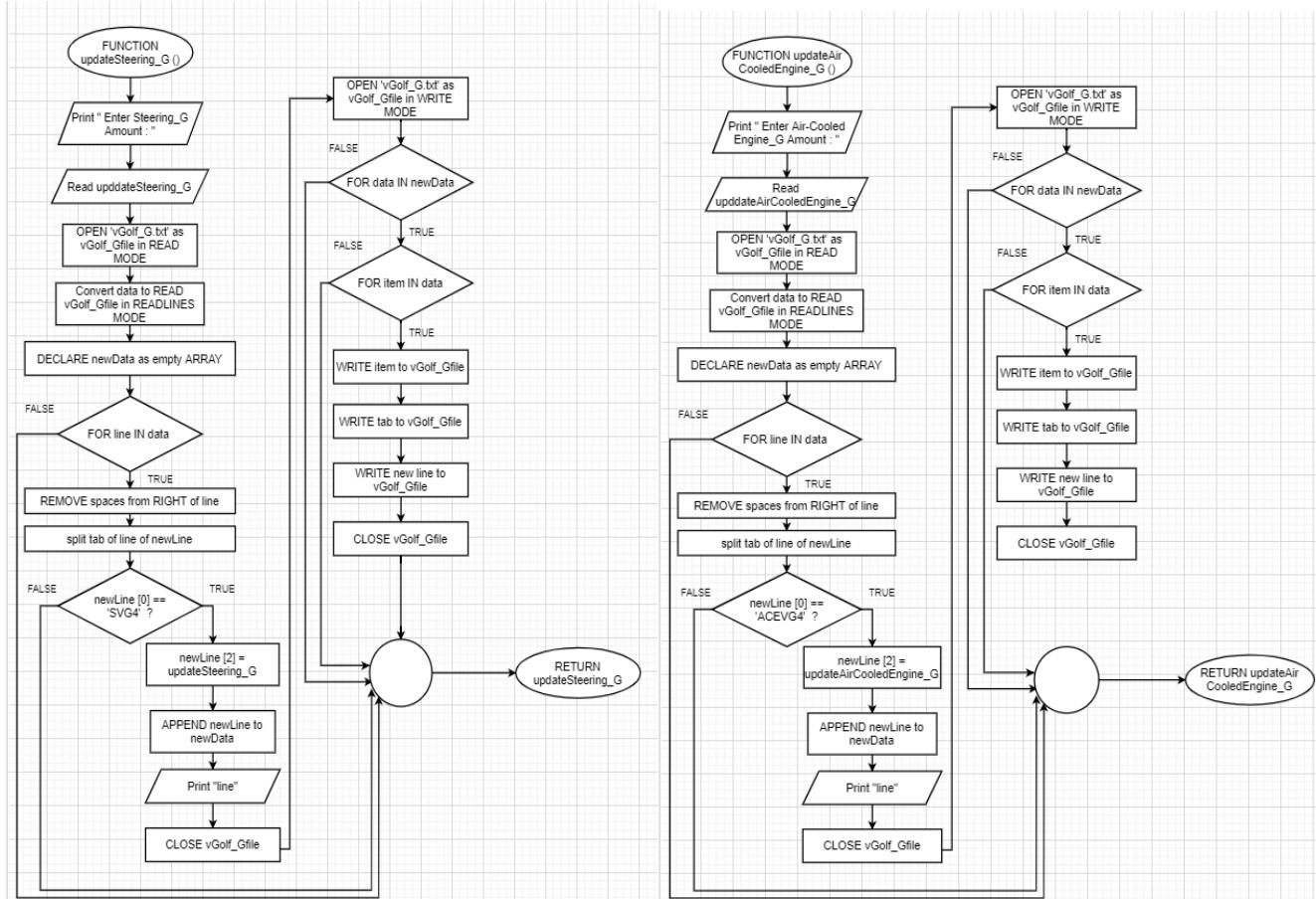


Figure 18

Update Parts' Amount



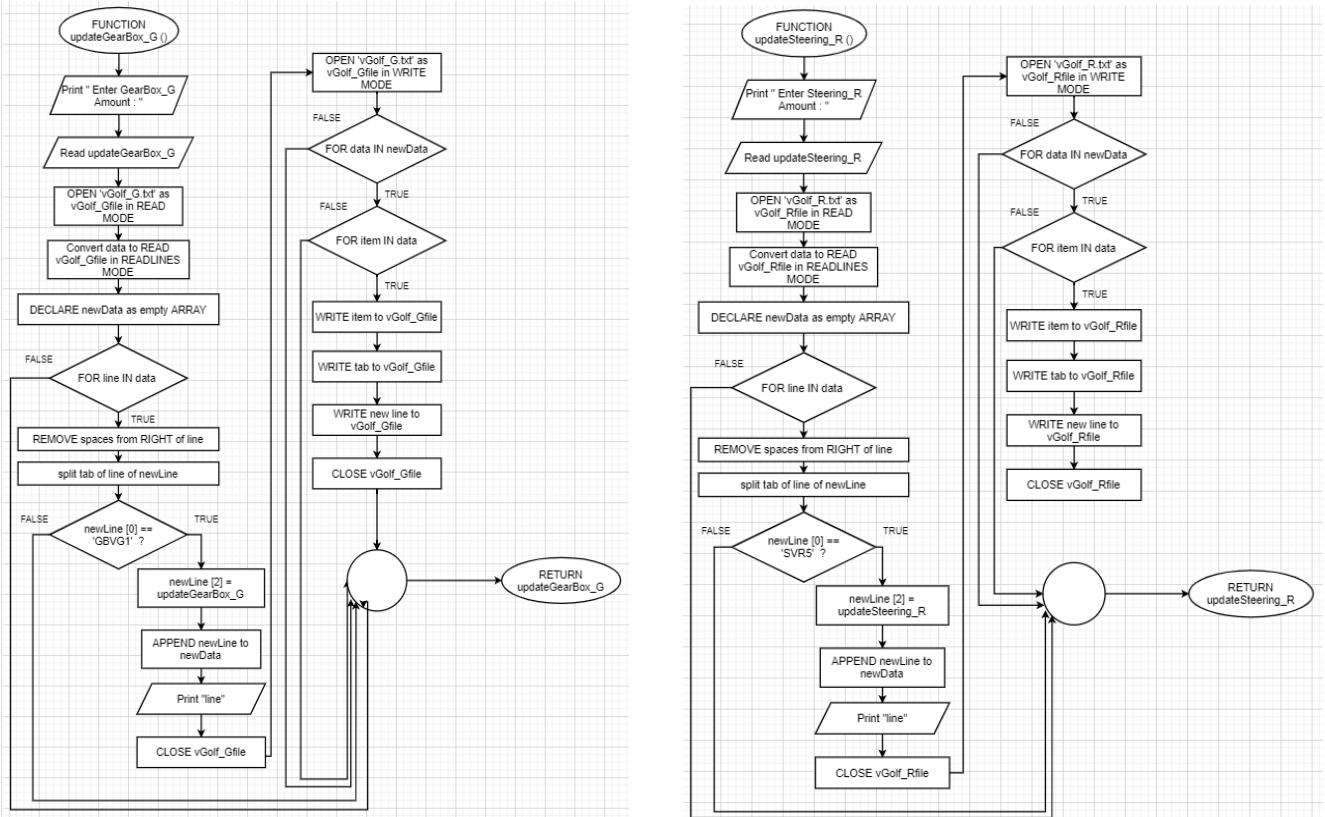
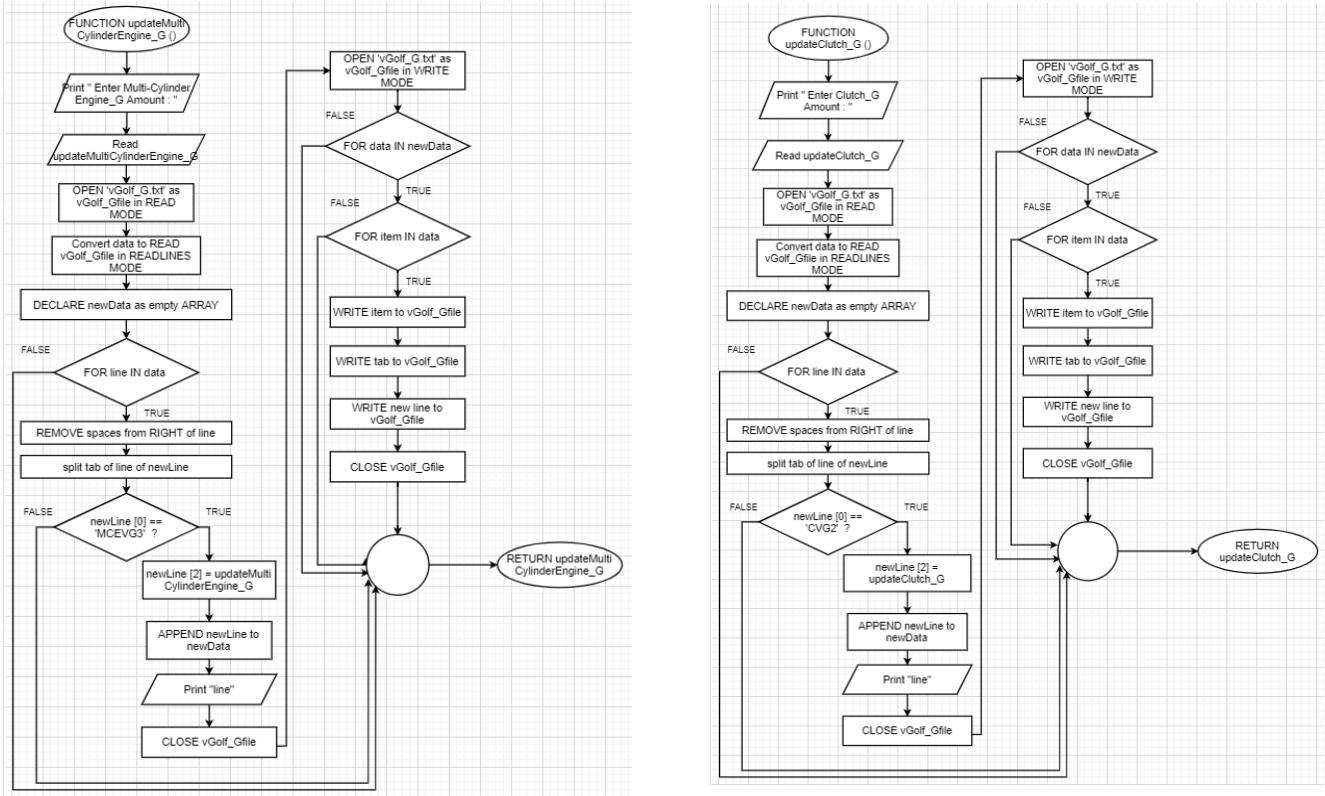


Figure 19

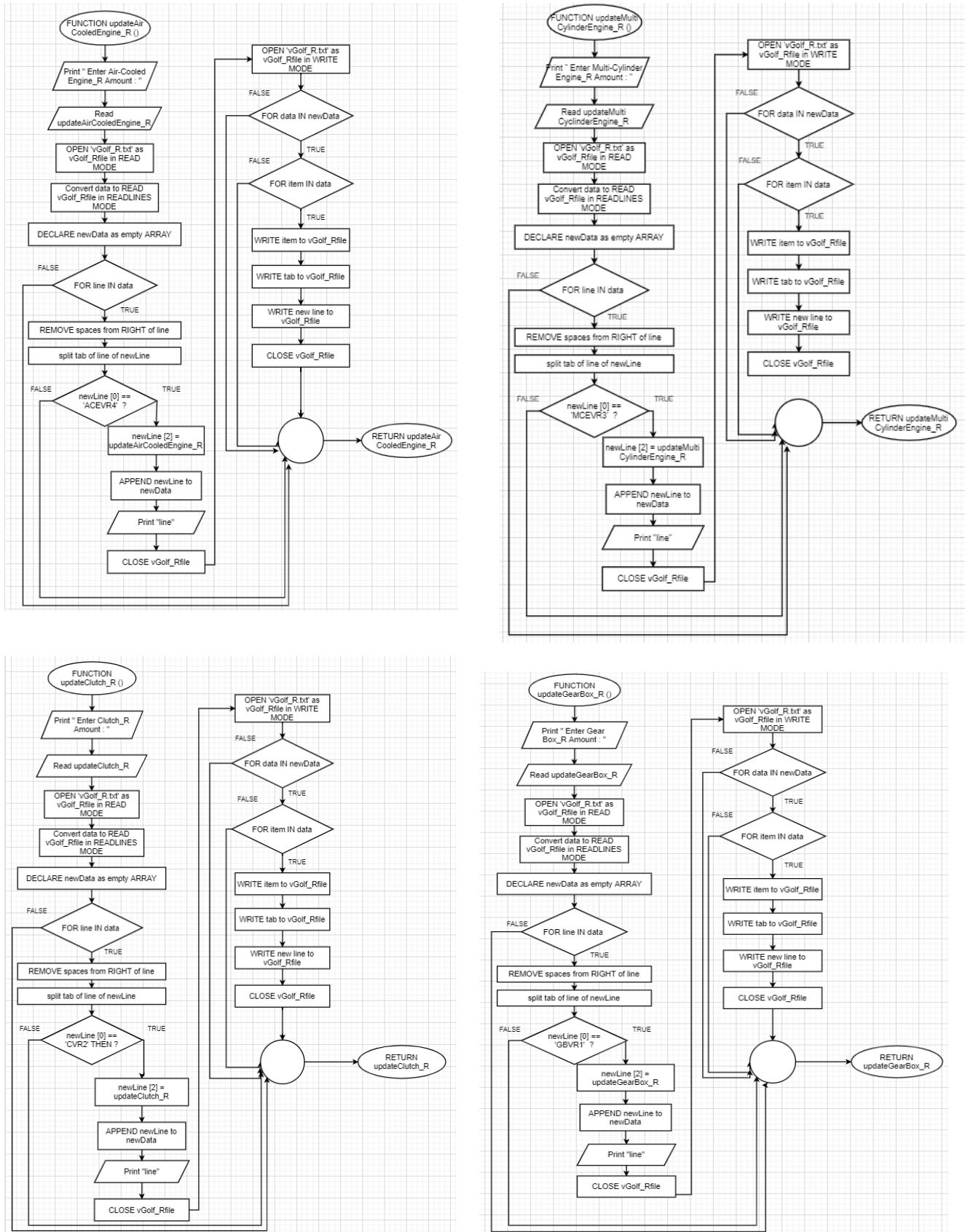


Figure 21

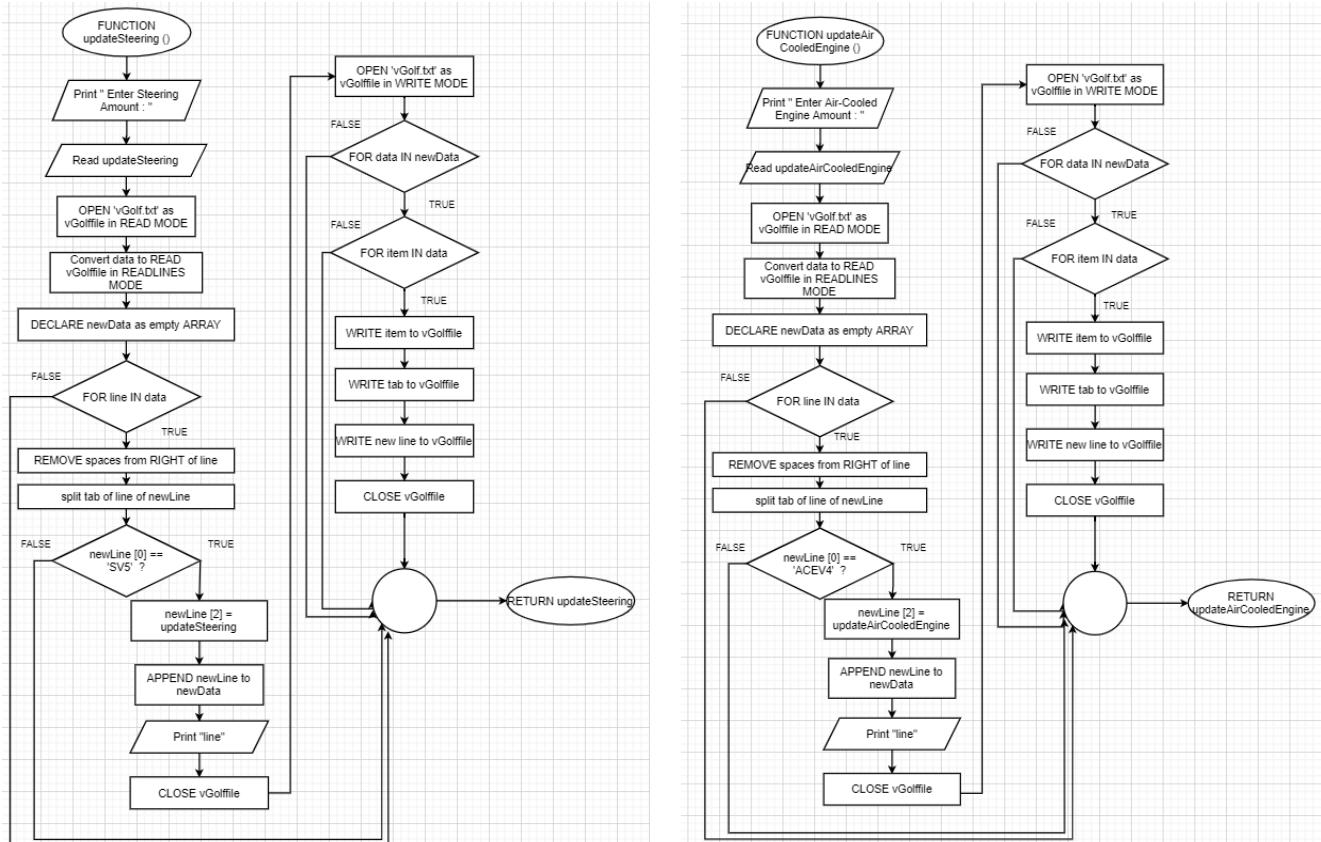


Figure 21

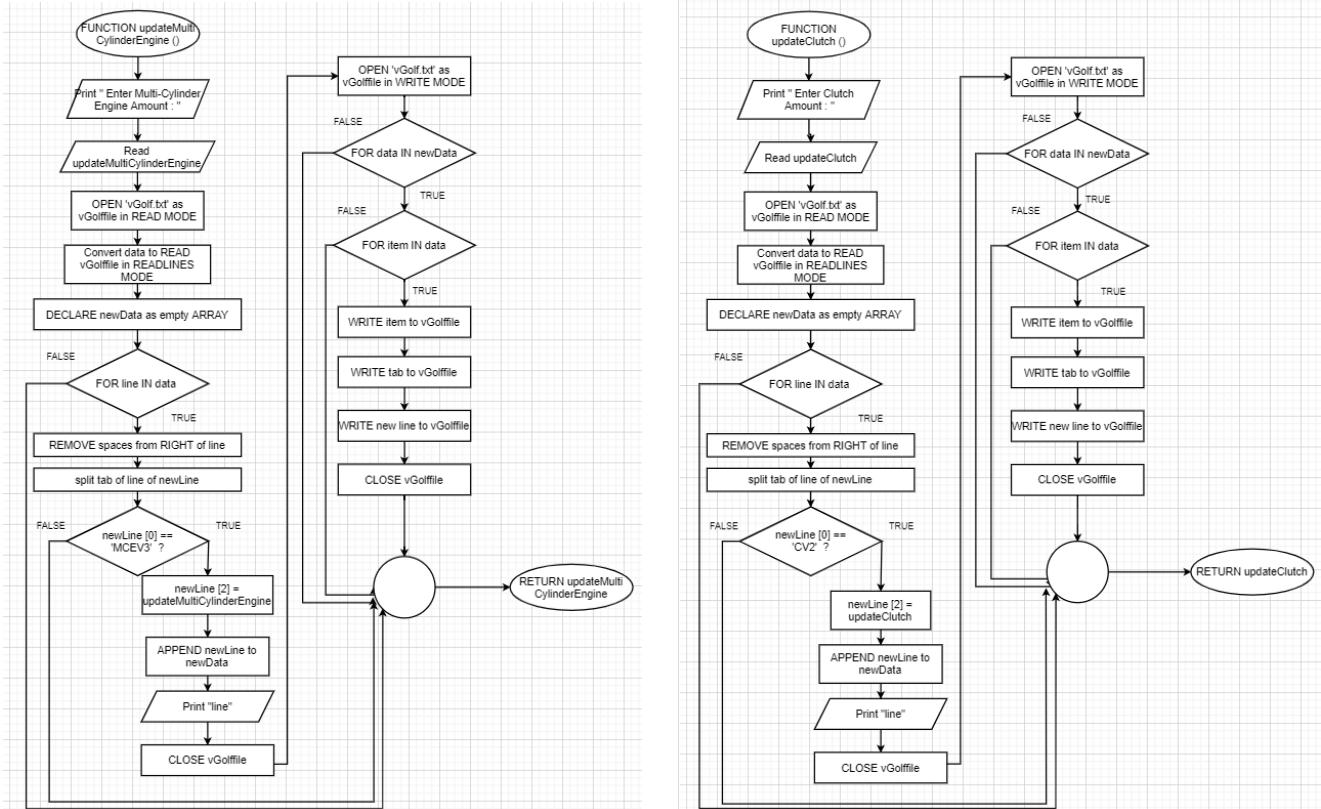


Figure 22

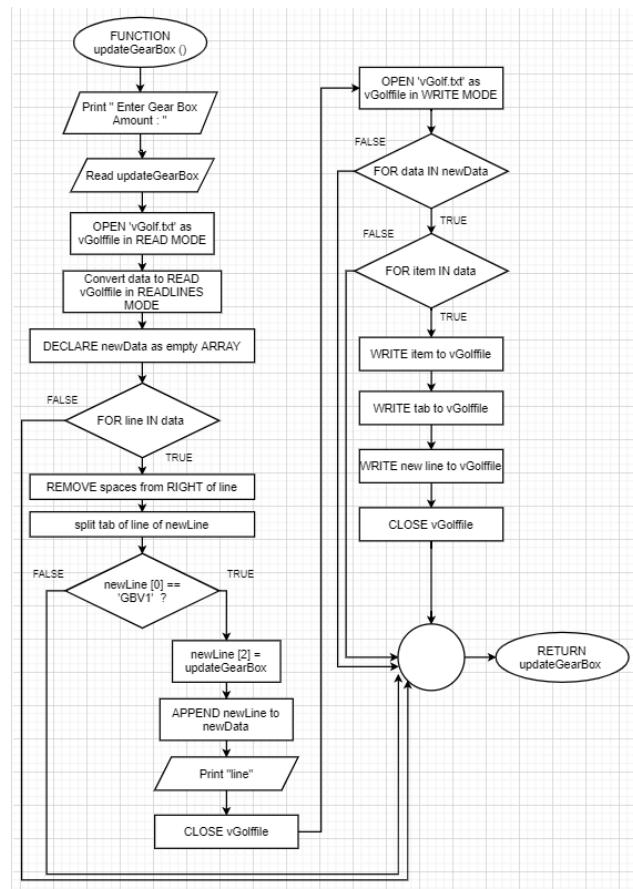


Figure 23

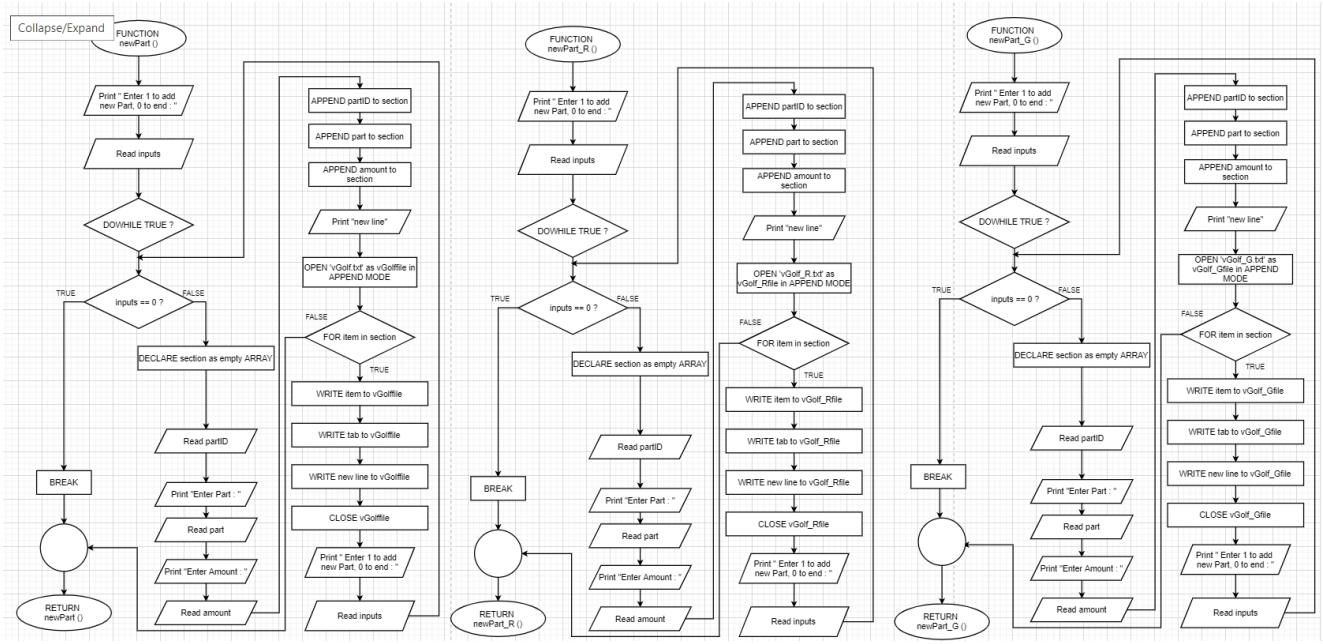


Figure 24

Supplier Information

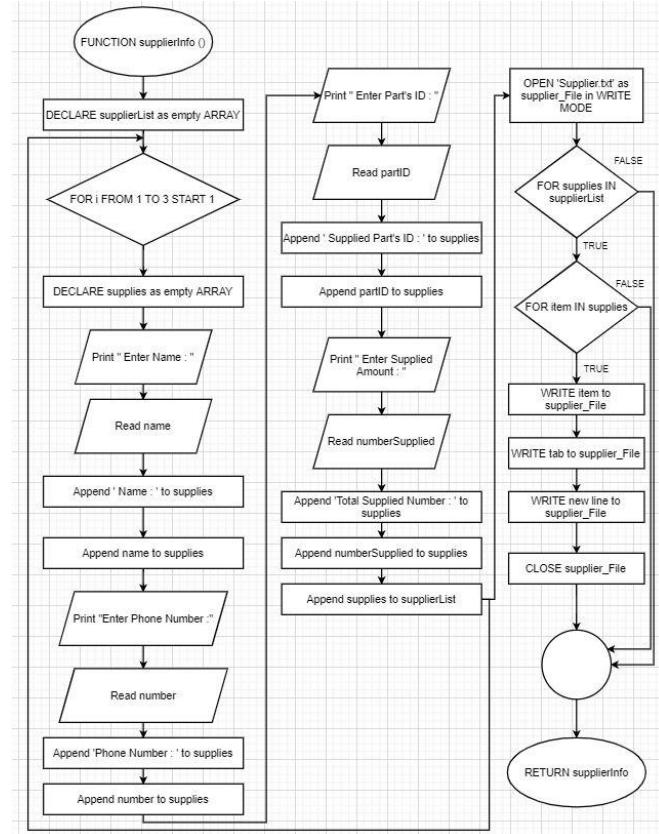
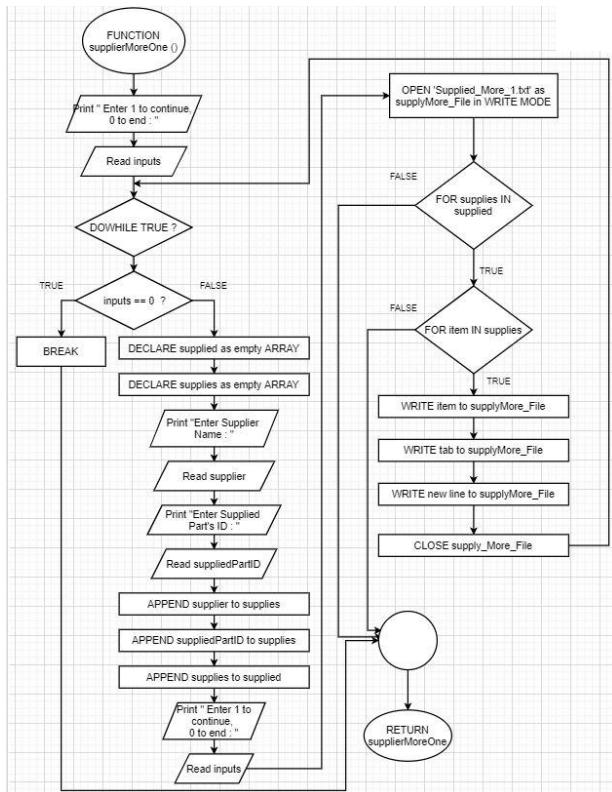


Figure 25



Record Supplier Supplied More Than One Part

Figure 26

Print Warehouse Records

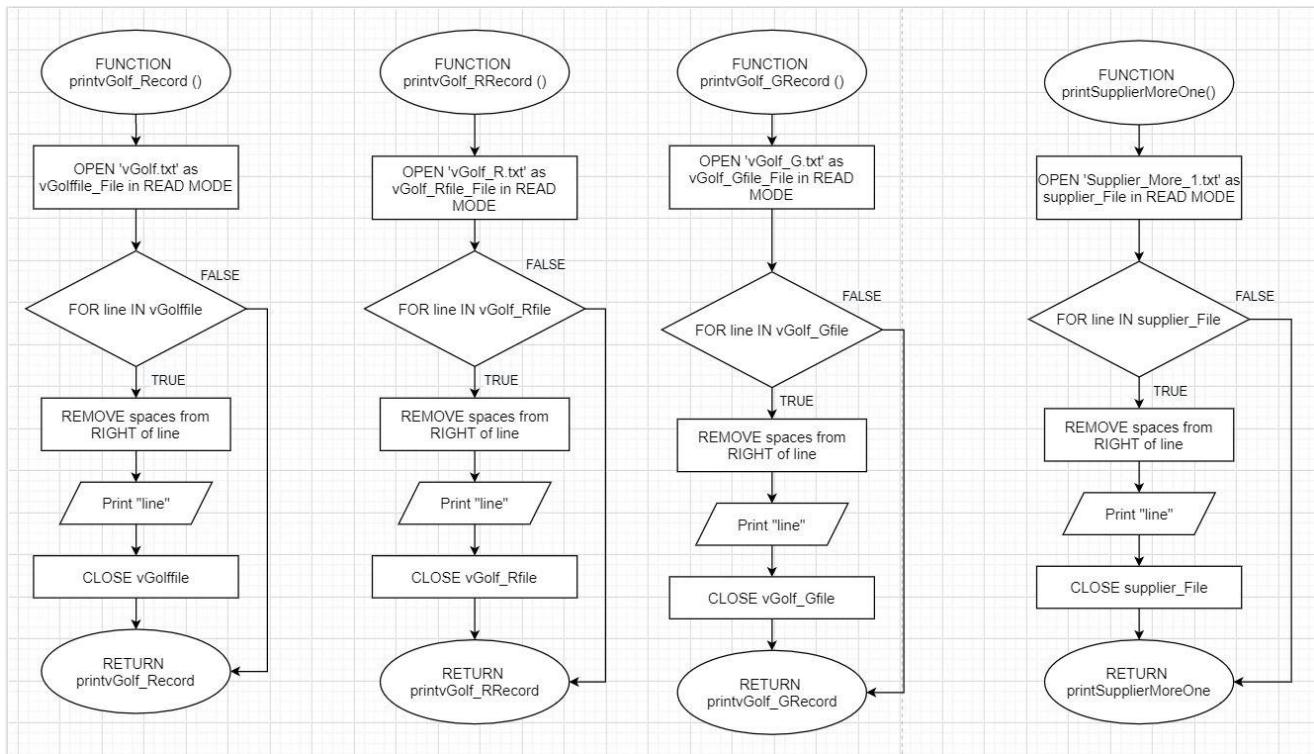


Figure 27

Print items that are below 10

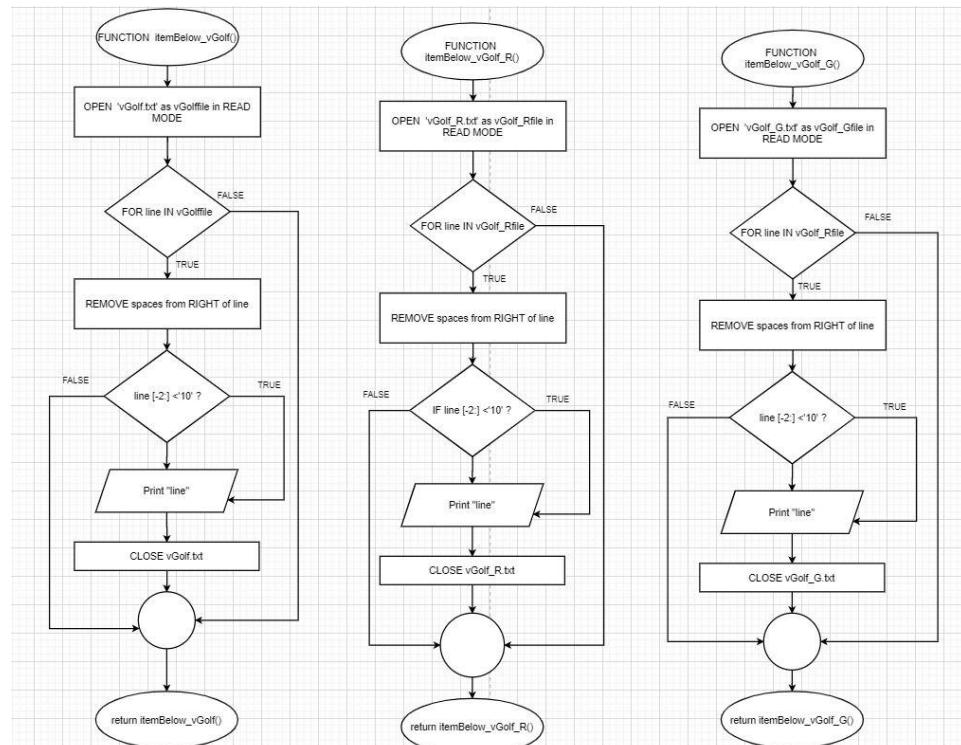


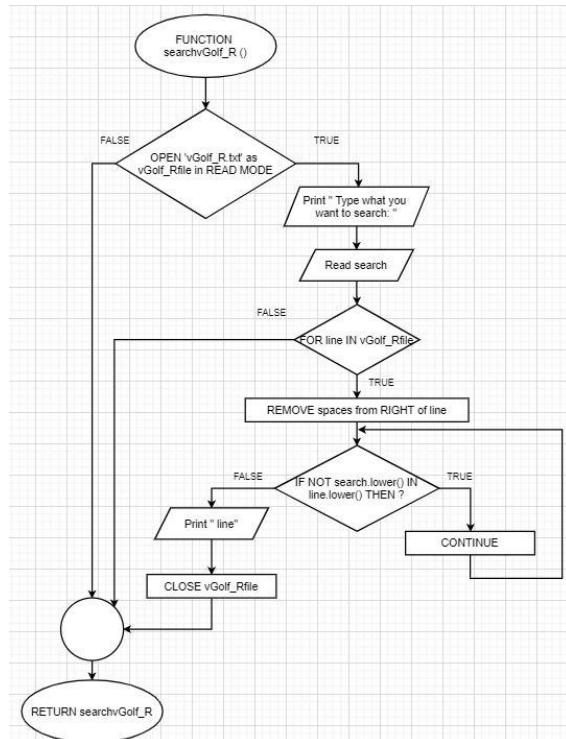
Figure 28

Print Section's Parts & Amount



Search Function

Figure 29



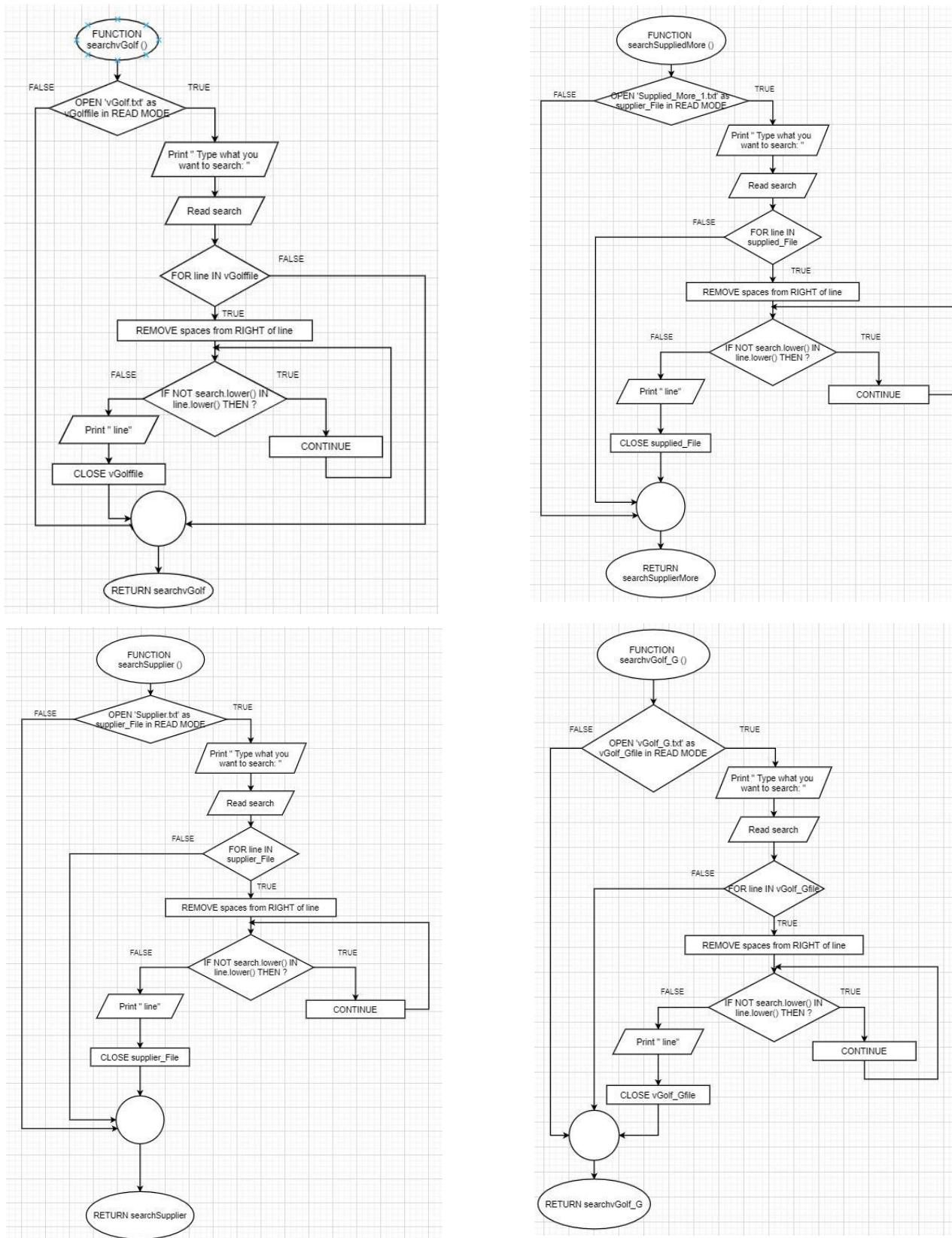


Figure 31

menu Function Flowchart

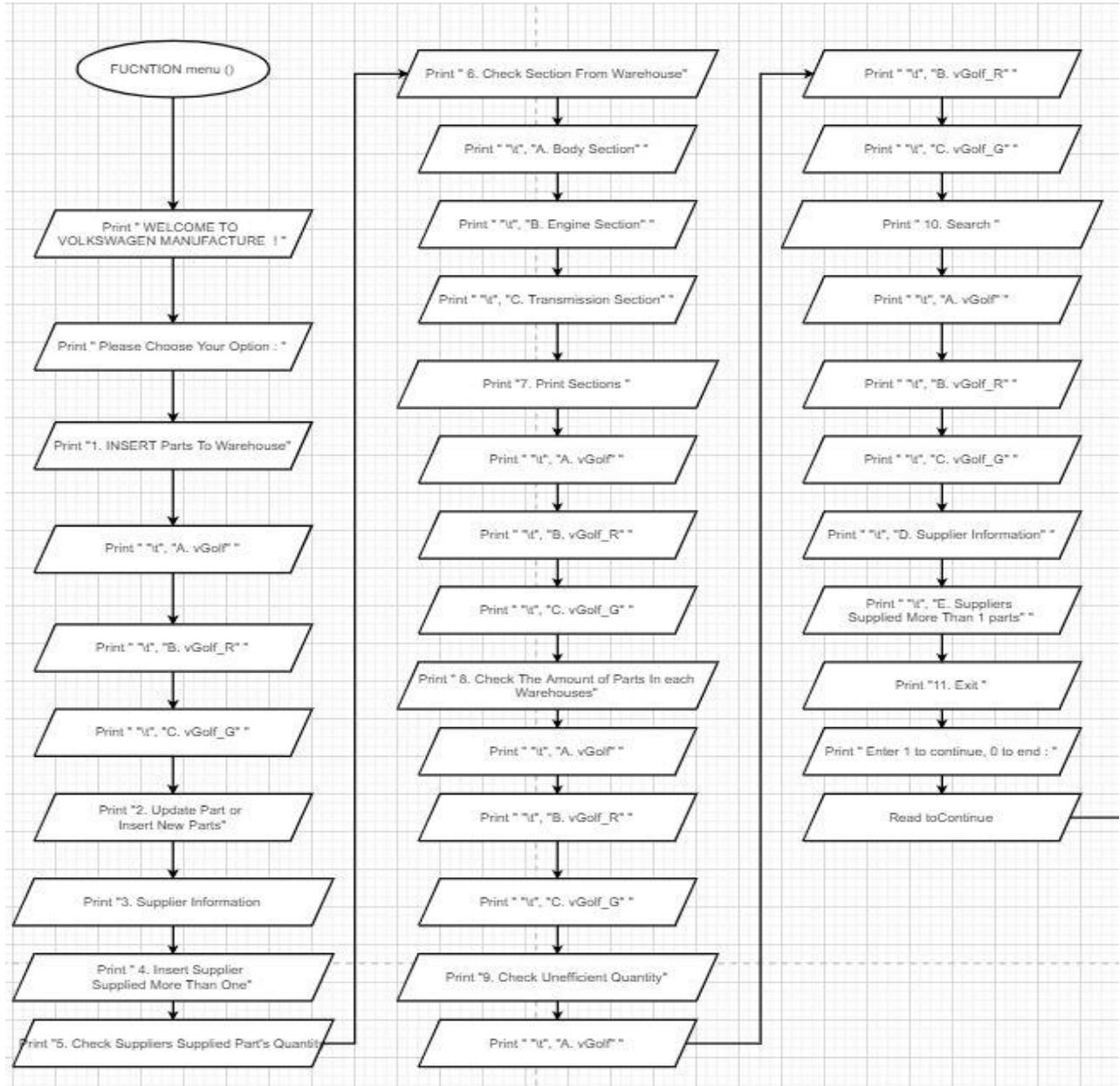


Figure 32

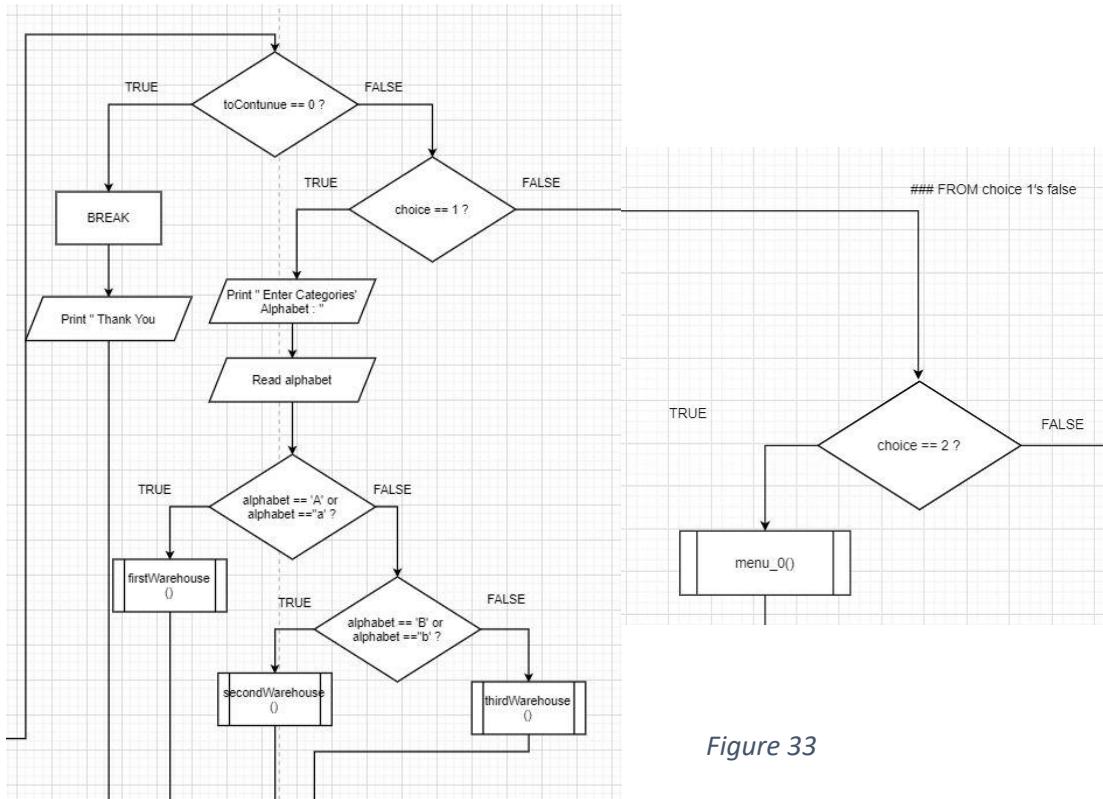


Figure 33

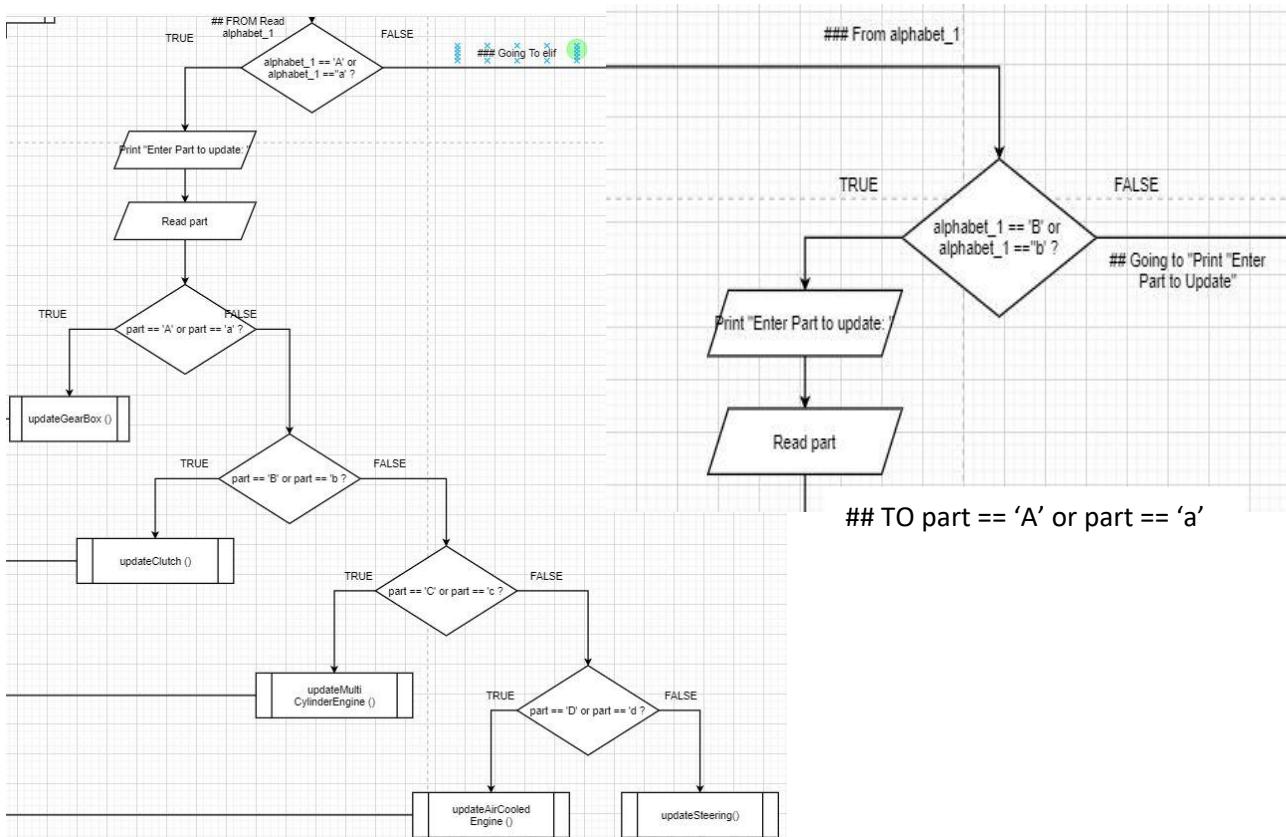


Figure 34

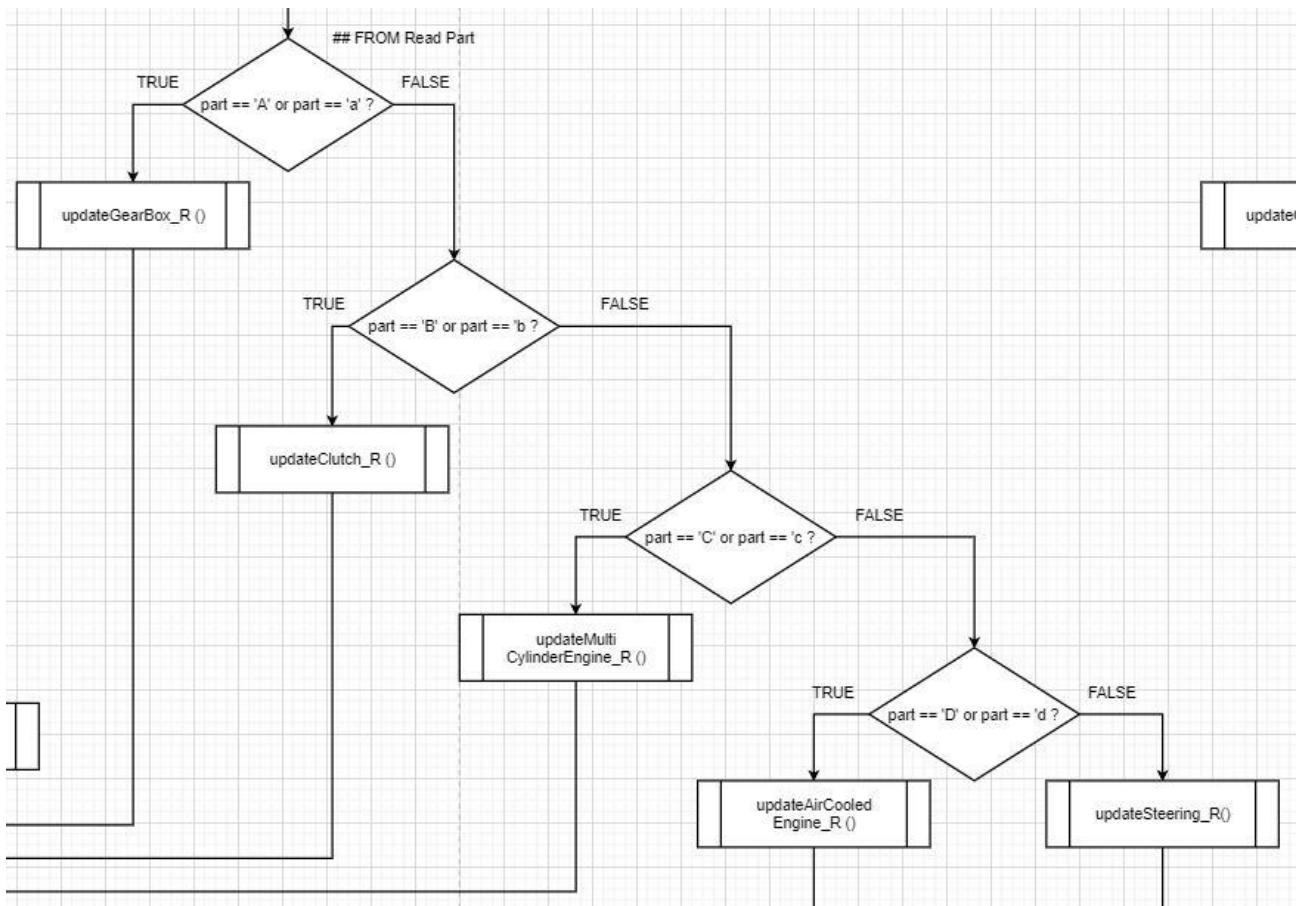


Figure 35

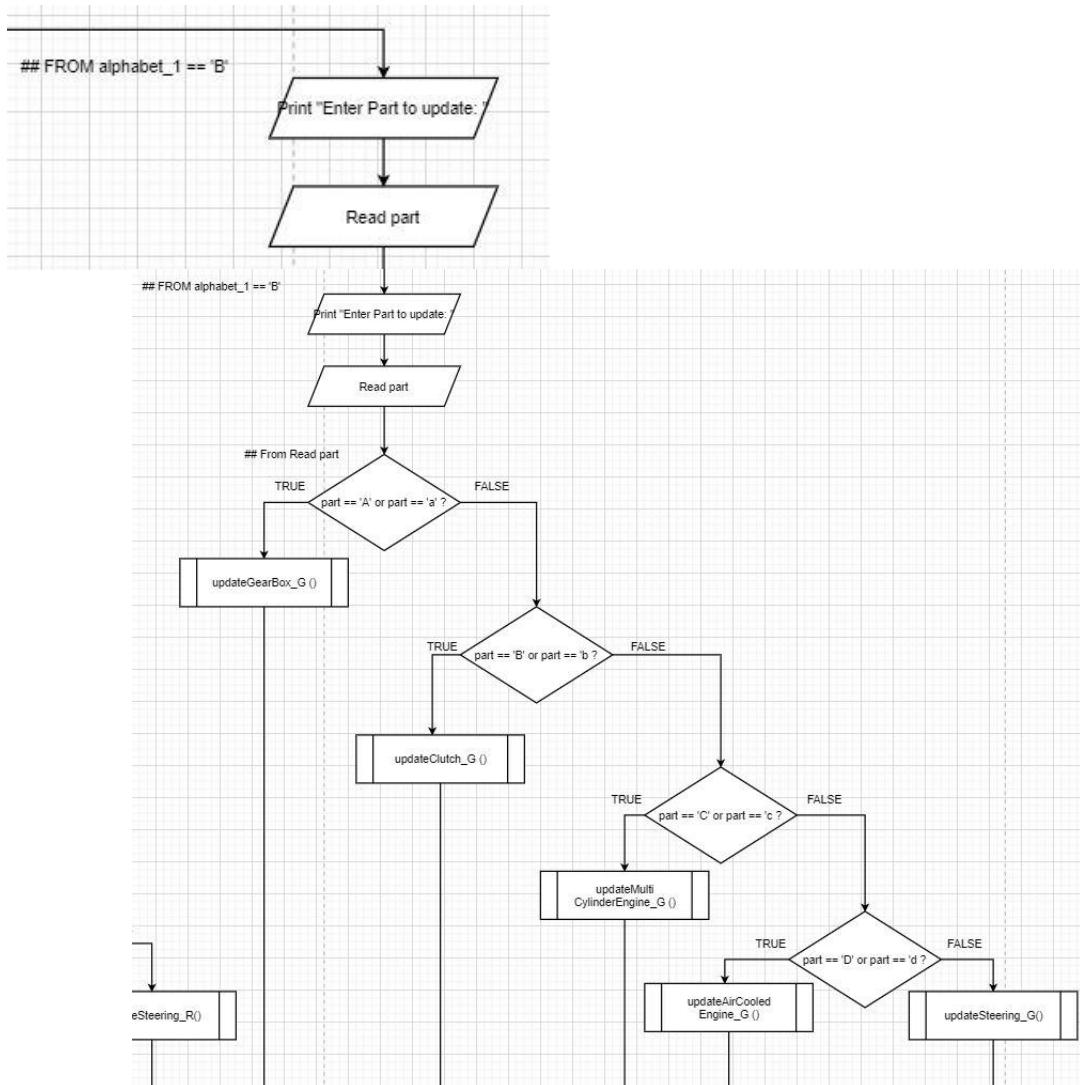


Figure 36

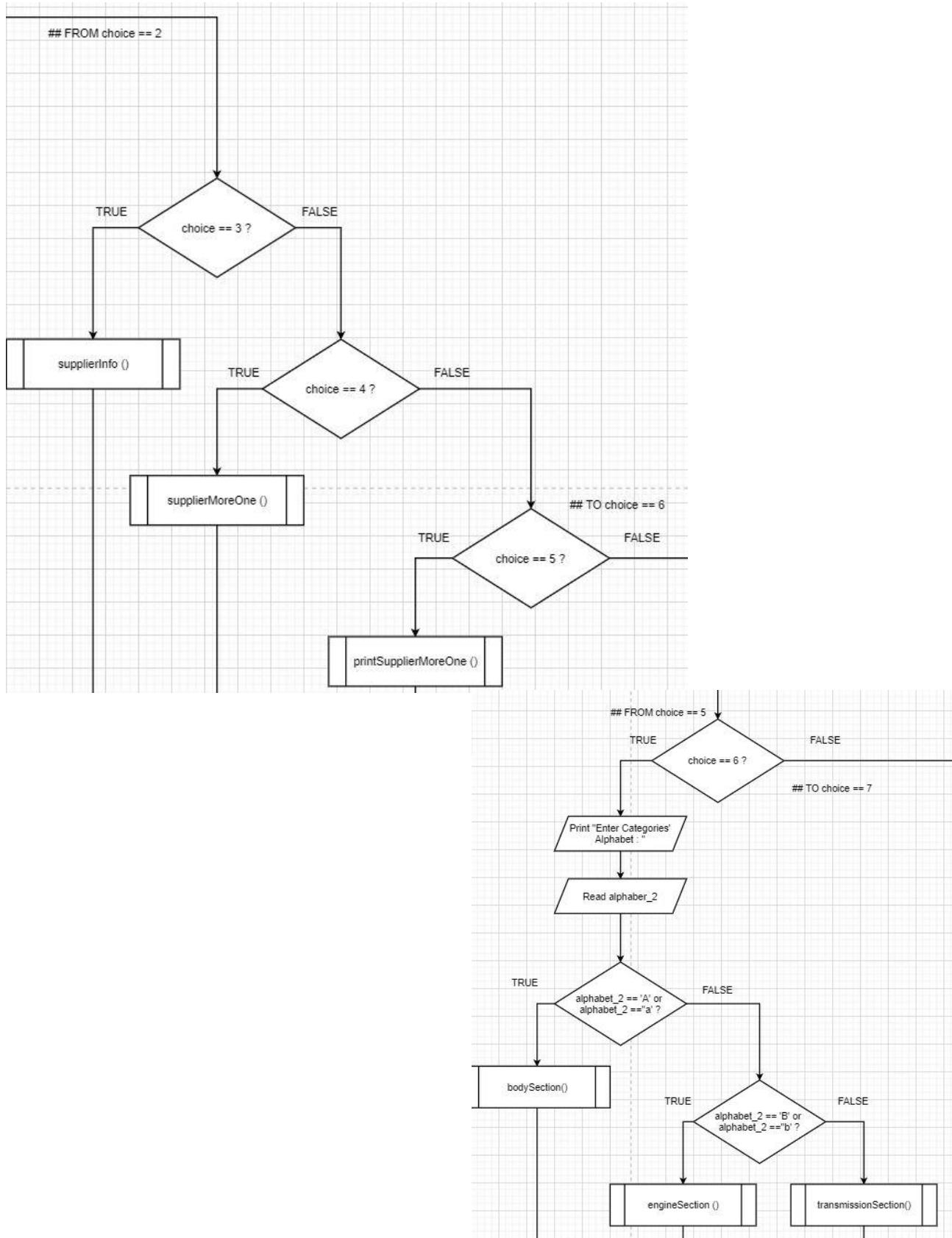


Figure 37

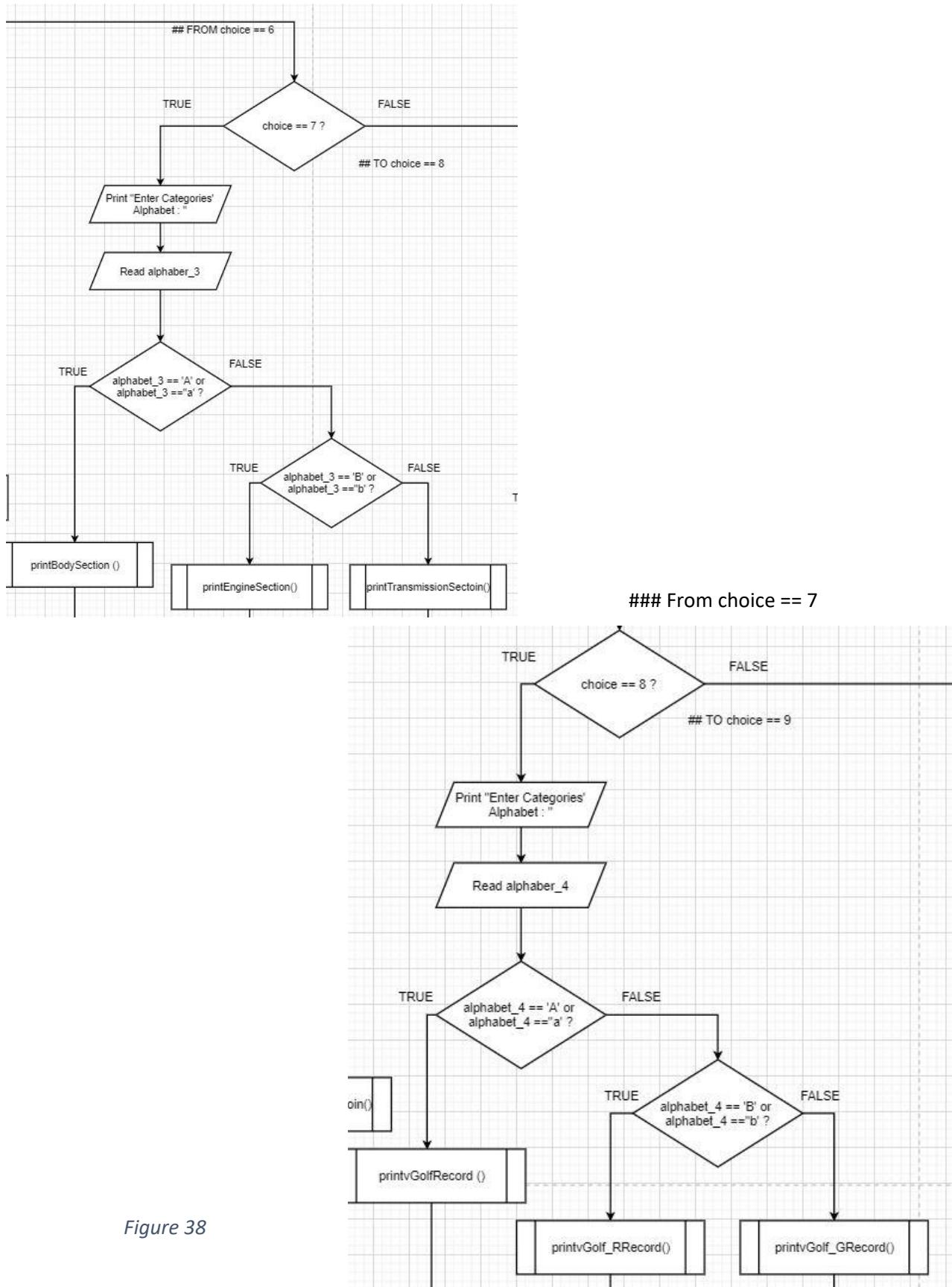
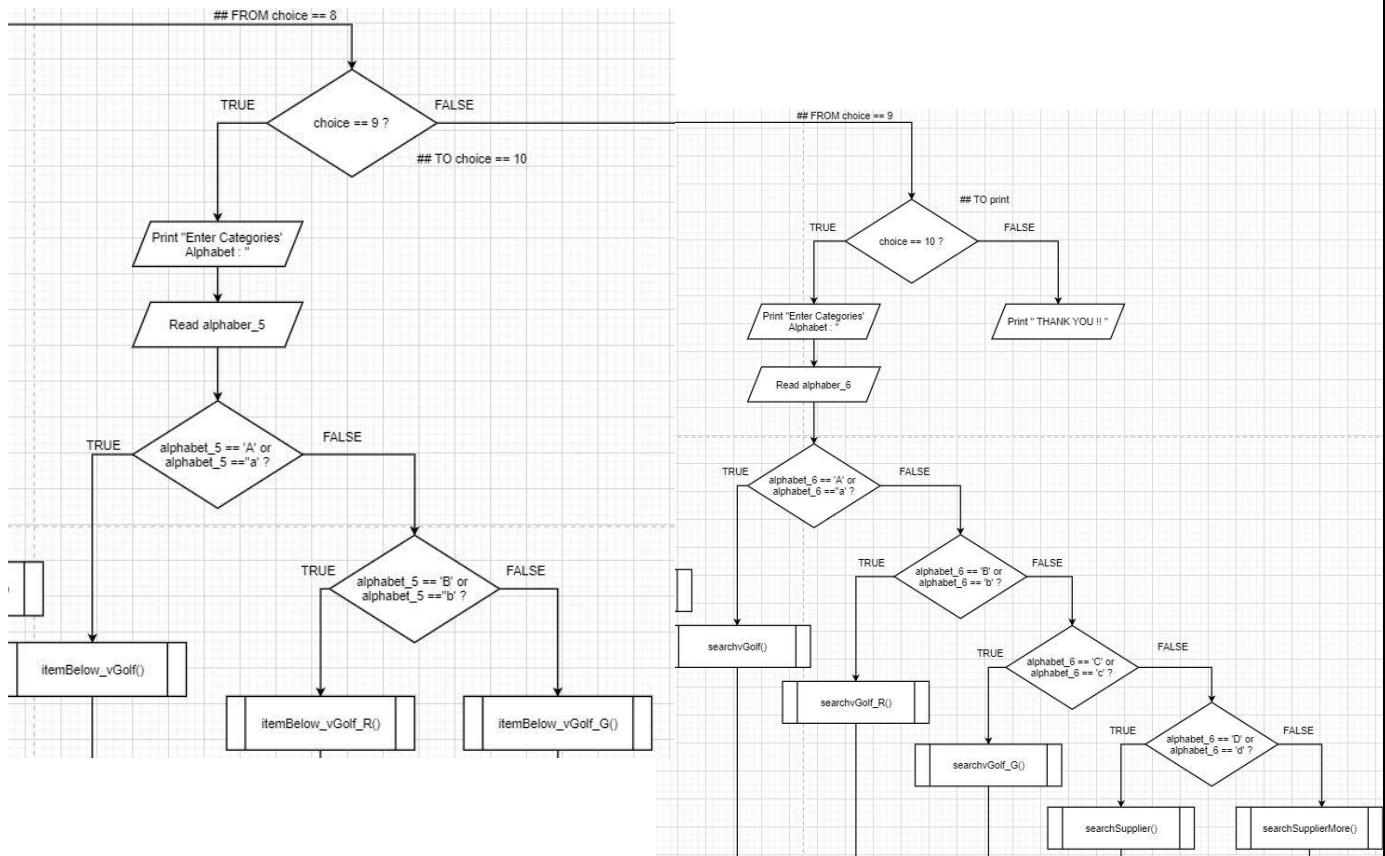


Figure 38



FROM every function symbol

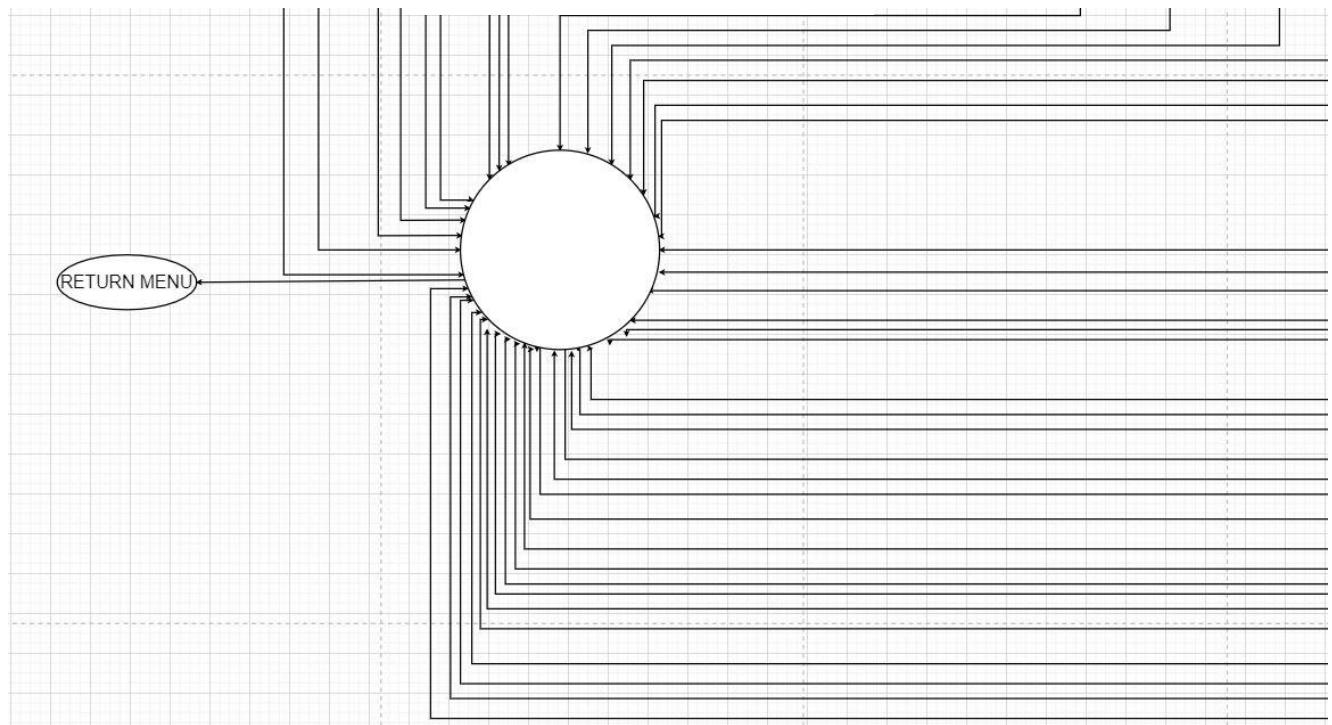
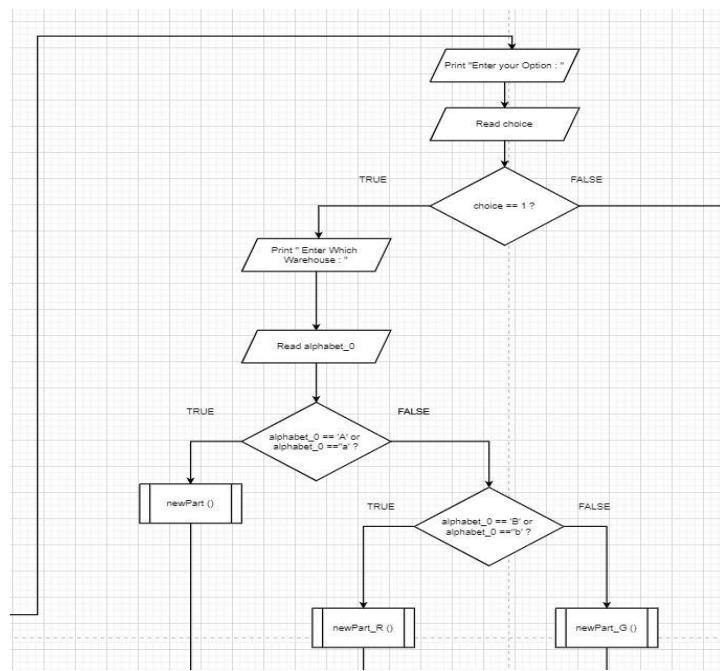
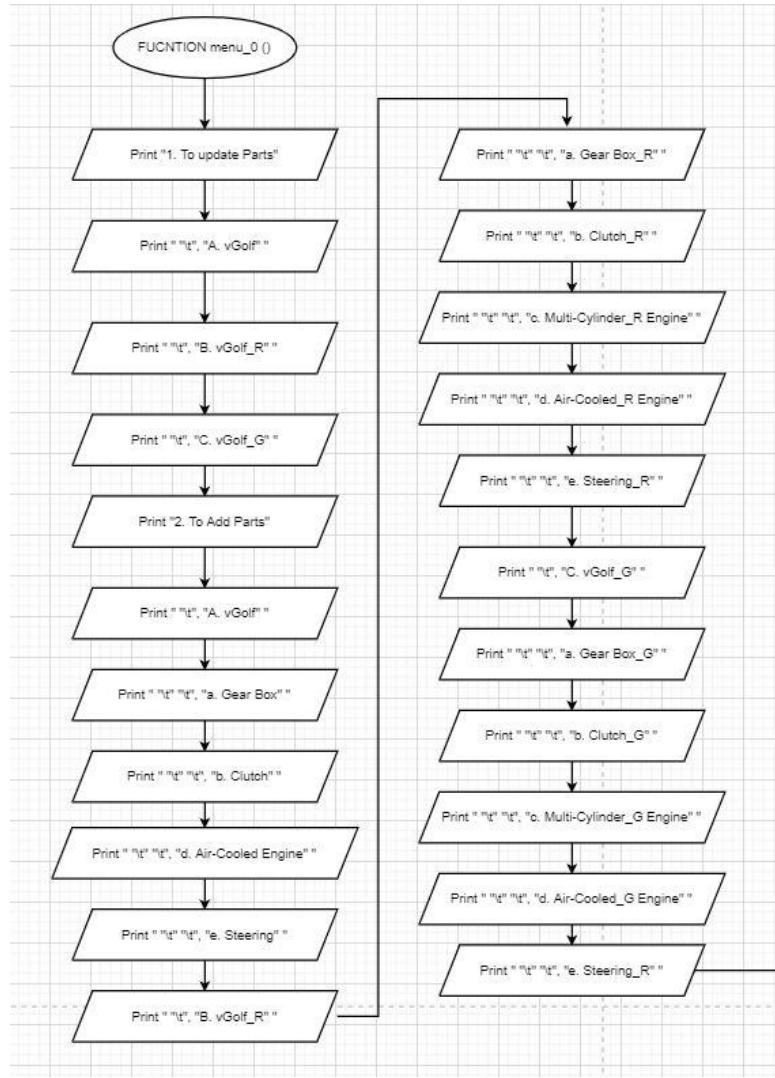
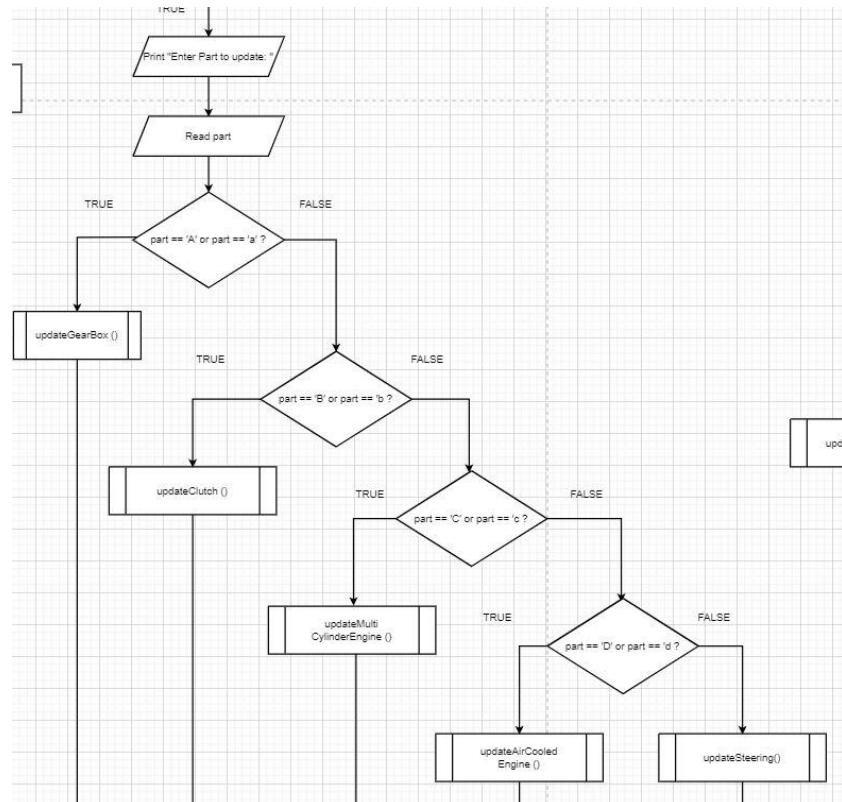
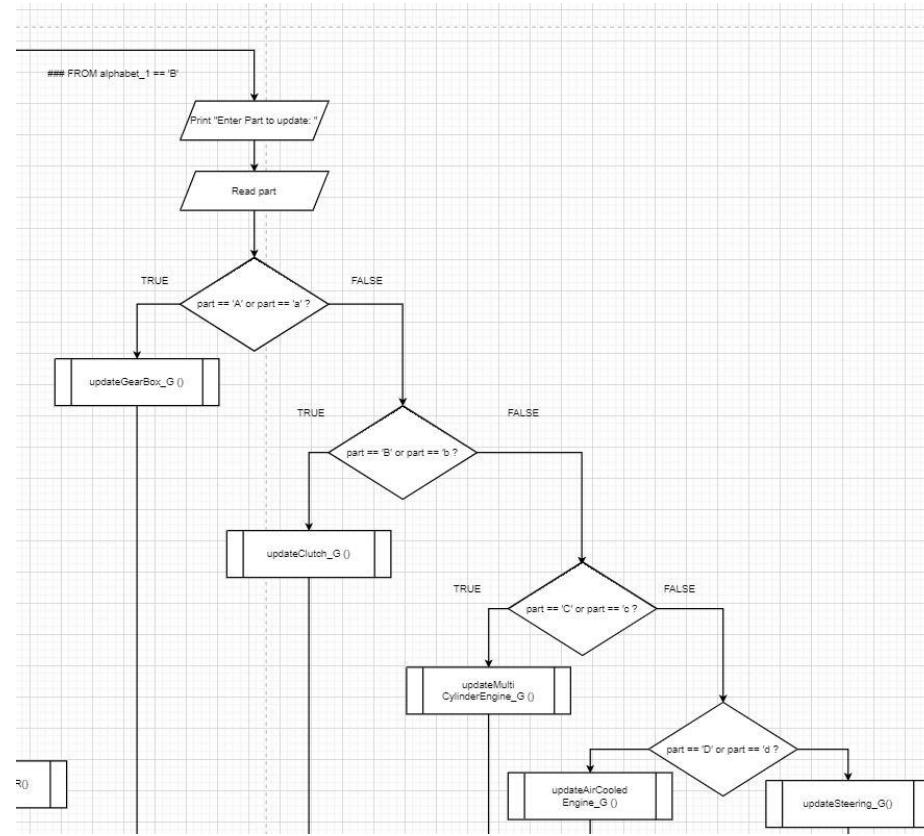
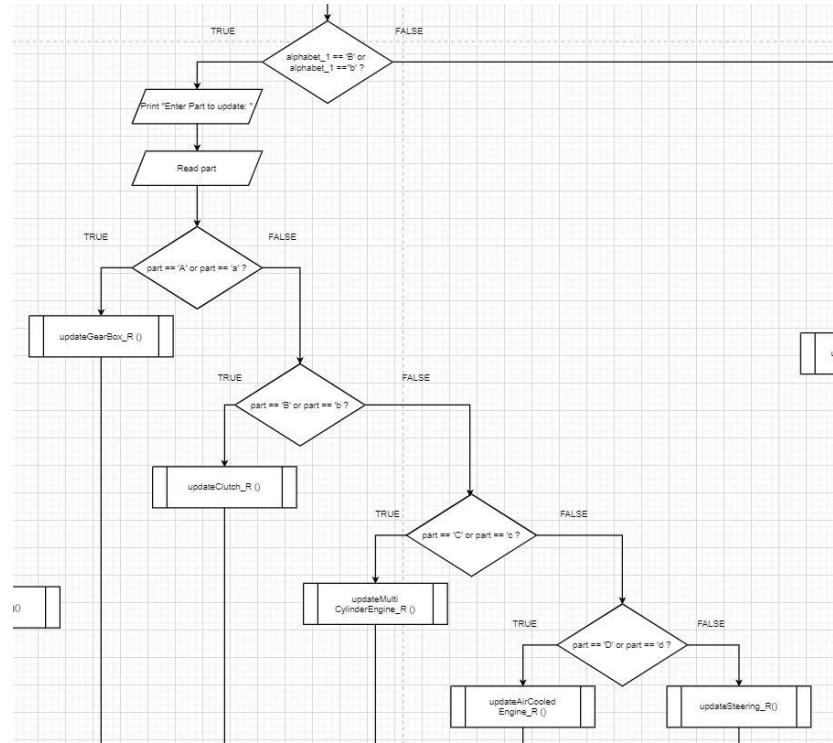


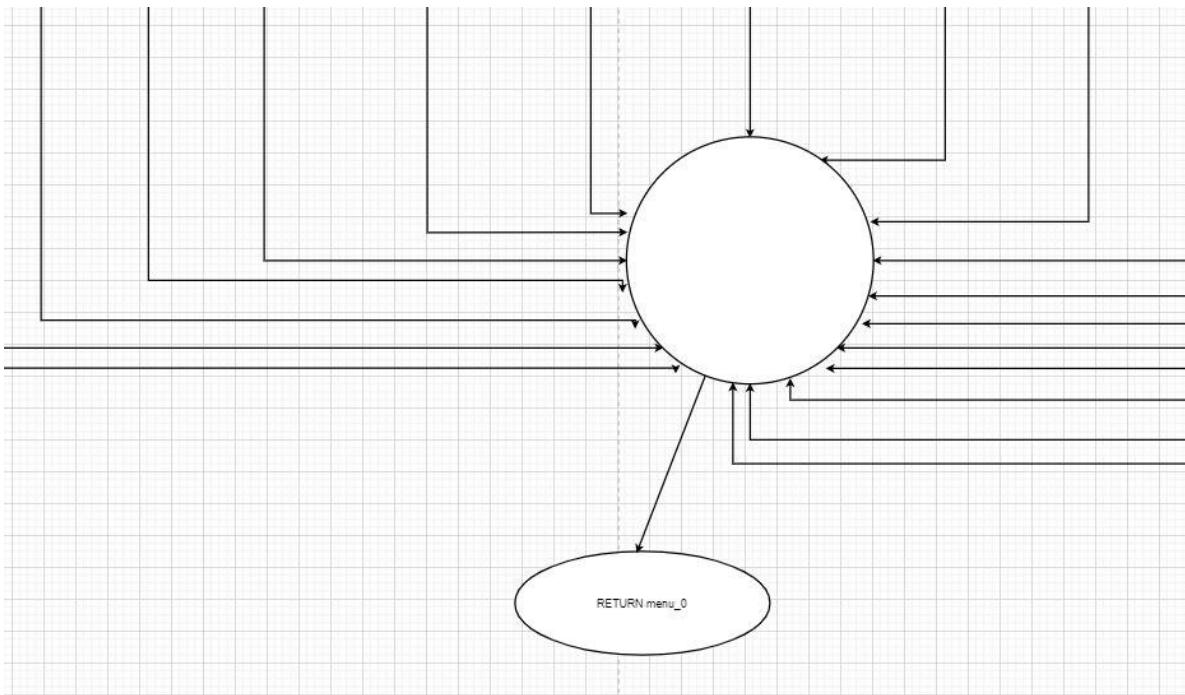
Figure 39







FROM every function symbol



Program Source Code Explanation

Firstly, record all the parts that have been collected into each respective warehouse which are shown in the three pictures under Warehouse in pseudocode. The three warehouses' pseudocode and flowchart representing vGolf, vGolf_R and vGolf_G. As there are only five main parts in each warehouse, a FOR loop is used to record five times of part with respective ID and amount that had collected. To record it in as an ascending order, each list is sorted after appending. All the part is recoded in a list named section and stored in another list named vGolf, vGolf_R and vGolf_G in each warehouse as a bigger list. Then, each of the items are stored in different text file named vGolf text file, vGolf_R text file and vGolf_G text file. For the section as if in the bigger list and for item as if inside the section will then write the inputs into text files. However, text file must be closed after finished recorded. Thus, warehouses' function are created.

To check if which item belongs to their section assembly and to record them to the text files, three functions are coded that shown under categorising parts to section. Each of the warehouses' text file are opened in read mode to read the lines inside. Once read the line that starts with section's part ID, the line will write into the sections' text files which are Body_Section text file for Body Section, Engine_Section text file for Engine Section and Transmission_Section text file for Transmission Section. Besides, all section's second line and following line are appended to the text file but write as write will rewrite the text file.

The pseudocodes in update part's amount represents updating quantity amount after receiving from suppliers or decreasing after providing in warehouses. Users are requested to enter the part's amount initially then respective warehouses text files are opened in read mode to read lines. To update a new input, an array is needed to write. The line in array will do remove the spaces from right of line and split the line with tab to update the input amount from user with IF condition. After that, warehouses' text files are opened in writing mode to write the items in text file. To add any new parts after updating the amount, there is an option for users to choose if new parts needed to add. Therefore, an array is

needed to record all the items and all of the item are appended to their own warehouses' text file as recording.

As there are only three suppliers supplying parts to our manufacture, a FOR loop is used to record their information in a text file after the first array. The second array is opened to write and append the items in it. To store the items containing supplier information, a text file named Supplier text file is opened in write mode to write items.

In addition, to record who has supplied more than one part, a function named supplierMoreOne is coded. To record as much supplied suppliers, a DOWHILE TRUE condition is used to keep recording until the user breaks. In term of recording, arrays are needed to keep the items inside as strings and append every input in a text file named supplied_more_1 text file in writing mode.

Printing and checking supplier and warehouses information, print function are shown under Print Warehouse Parts Record. First of all is to open the text files in read mode and remove the spaces from right to print the line showing all the information in the warehouses or supplier's information. Moreover, using the same method to print out the section's parts and amount and to identify which item is insufficient.

Search function are used to search information. A try and except condition is used as if text file does not exist will quit the program. After insert search input the program will check if the inputs were matched with line. Once false, the program will keep continue until it matched with printing the line as an output.

Screen Shot of input and output

```

Enter 1 to continue , 0 to end : 1
Enter Your Option : 1
Select Which Warehouse : a
Enter Part's ID : ACEV4
Enter Part : Air-Cooled Engine
Enter Amount : 34

Enter Part's ID : SV5
Enter Part : Steering
Enter Amount : 56

Enter Part's ID : GBV1
Enter Part : Gear Box
Enter Amount : 8

Enter Part's ID : CV2
Enter Part : Clutch
Enter Amount : 88

Enter Part's ID : MCEV3
Enter Part : Multi-Cylinder Engine
Enter Amount : 45

Enter 1 to continue , 0 to end : 1
Enter Your Option : 1
Select Which Warehouse : B
Enter Part's ID : SVR 5
Enter Part : Steering_R
Enter Amount : 9

Enter Part's ID : MCEVR3
Enter Part : Multi-Cylinder_R Engine
Enter Amount : 90

Enter Part's ID : CVR2
Enter Part : Clutch_R
Enter Amount : 89

Enter Part's ID : ACEVR4
Enter Part : Air-Cooled_R Engine
Enter Amount : 67

Enter Part's ID : GBVR1
Enter Part : Gear Box_R
Enter Amount : 45

Enter 1 to continue , 0 to end : 1
Enter Your Option : 1
Select Which Warehouse : c
Enter Part's ID : GBVG1
Enter Part : Gear Box_G
Enter Amount : 78

Enter Part's ID : SVG5
Enter Part : Steering_G
Enter Amount : 34

Enter Part's ID : MCEVG3
Enter Part : Multi-Cylinder_G Engine
Enter Amount : 34

Enter Part's ID : ACEVG4
Enter Part : Air-Cooled Engine
Enter Amount : 34

Enter Part's ID : CVG2
Enter Part : Clutch_G
Enter Amount : 456

```

vGolf - Notepad			
File Edit Format View Help			
ACEV4	Air-Cooled Engine	34	
CV2	Clutch	88	
GBV1	Gear Box	8	
MCEV3	Multi-Cylinder Engine	45	
SV5	Steering	56	

vGolf_R - Notepad			
File Edit Format View Help			
ACEVR4	Air-Cooled_R Engine	67	
CVR2	Clutch_R	89	
GBVR1	Gear Box_R	45	
MCEVR3	Multi-Cylinder_R Engine	90	
SVR5	Steering_R	9	

vGolf_G - Notepad			
File Edit Format View Help			
ACEVG4	Air-Cooled_G Engine	34	
CVG2	Clutch_G	456	
GBVG1	Gear Box_G	78	
MCEVG3	Multi-Cylinder_G Engine	34	
SVG5	Steering_G	34	

Figure 40

Picture above shows part's ID, part name and amount of three warehouses and the input.

```

Enter 1 to continue , 0 to end : 1
Enter Your Option : 6
Check Which Section : A
ACEV4 Air-Cooled Engine 34
CV2 Clutch 88
GBV1 Gear Box 8
MCEV3 Multi-Cylinder Engine 45
SV5 Steering 56
ACEVR4 Air-Cooled_R Engine 67
CVR2 Clutch_R 89
GBVR1 Gear Box_R 45
MCEVR3 Multi-Cylinder_R Engine 90
SVR5 Steering_R 9
ACEVG4 Air-Cooled Engine 34
CVG2 Clutch_G 456
GBVG1 Gear Box_G 78
MCEVG3 Multi-Cylinder_G Engine 34
SVG5 Steering_G 34

```

Body_Section - Notepad			
File	Edit	Format	View Help
SV5	Steering	56	
SVR5	Steering_R	9	
SVG5	Steering_G	34	

The pictures above show all the parts that belonging to body section from three warehouses.

```

Enter 1 to continue , 0 to end : 1
Enter Your Option : 6
Check Which Section : B
ACEV4 Air-Cooled Engine 34
CV2 Clutch 88
GBV1 Gear Box 8
MCEV3 Multi-Cylinder Engine 45
SV5 Steering 56
ACEV4 Air-Cooled Engine 34
CVR2 Clutch 88
GBV1 Gear Box 8
MCEV3 Multi-Cylinder Engine 45
SV5 Steering 56
ACEVR4 Air-Cooled_R Engine 67
CVR2 Clutch_R 89
GBVR1 Gear Box_R 45
MCEVR3 Multi-Cylinder_R Engine 90
SVR5 Steering_R 9
ACEVR4 Air-Cooled_R Engine 67
CVR2 Clutch_R 89
GBVR1 Gear Box_R 45

```

Engine_Section - Notepad			
File	Edit	Format	View Help
MCEV3	Multi-Cylinder Engine	45	
ACEV4	Air-Cooled Engine	34	
MCEVR3	Multi-Cylinder_R Engine	90	
ACEVR4	Air-Cooled_R Engine	67	
MCEVG3	Multi-Cylinder_G Engine	34	
ACEVG4	Air-Cooled_G Engine	34	

Figure 41

Figure 41 shows the output and input of the engine section.

```

Enter 1 to continue , 0 to end : 1
Enter Your Option : 6
Check Which Section : C
ACEV4    Air-Cooled Engine      34
CV2      Clutch     88
GBV1    Gear Box      8
MCEV3    Multi-Cylinder Engine  45
SV5      Steering      56
ACEV4    Air-Cooled Engine      34
CV2      Clutch     88
GBV1    Gear Box      8
MCEV3    Multi-Cylinder Engine  45
SV5      Steering      56
ACEVR4   Air-Cooled_R Engine    67
CVR2    Clutch_R     89
GBVR1   Gear Box_R     45
MCEVR3   Multi-Cylinder_R Engine 90
SVR5    Steering_R     9
ACEVR4   Air-Cooled_R Engine    67
CVR2    Clutch_R     89
GBVR1   Gear Box_R     45
MCEVR3   Multi-Cylinder_R Engine 90
SVR5    Steering_R     9
ACEVG4   Air-Cooled Engine      34
CVG2    Clutch_G     456
GBVG1   Gear Box_G     78
MCEVG3   Multi-Cylinder_G Engine 34
SVG5    Steering_G     34
ACEVG4   Air-Cooled Engine      34
CVG2    Clutch_G     456
GBVG1   Gear Box_G     78
MCEVG3   Multi-Cylinder_G Engine 34
SVG5    Steering_G     34

```

Transmission_Section - Notepad		
File	Edit	Format
GBV1	Gear Box	8
CV2	Clutch	88
GBVR1	Gear Box_R	45
CVR2	Clutch_R	89
GBVG1	Gear Box_G	78
CVG2	Clutch_G	456

Figure 42

Above pictures show the parts recording to the transmission section and the output is shown on the right.

```

Enter 1 to continue , 0 to end : 1
Enter Your Option : 3
Enter Name : Volkswagen Group
Enter Phone Number : 0164158649
Supplied Part's ID : ACE
Enter Supplied Amount : 107
Enter Name : ZF Lenksysteme
Enter Phone Number : 0127488649
Supplied Part's ID : MCE, S5
Enter Supplied Amount : 89
Enter Name : Blaupunkt
Enter Phone Number : 01119697853
Supplied Part's ID : CV
Enter Supplied Amount : 78
Enter 1 to continue , 0 to end : 1
Enter Your Option : 4
Enter 1 to record, 0 to end : 1
Enter Supplier Name : ZF Lenksysteme
Parts Supplied : Gear Box
Enter 1 to record, 0 to end : 1
Enter Supplier Name : ZF Lenksysteme
Parts Supplied : Multi-Cyclinder Engine
Enter 1 to record, 0 to end : 0
Enter 1 to continue , 0 to end : 0

```

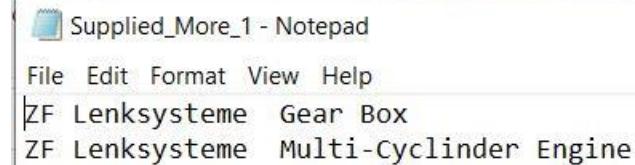


Figure 43

In Figure 43, there is a function of representing inserting supplier who supplies more than a part and showed in text file.

```

Enter 1 to continue , 0 to end : 1
Enter Your Option : 3
Enter Name : Volkswagen Group
Enter Phone Number : 0164158649
Supplied Part's ID : ACE
Enter Supplied Amount : 107
Enter Name : ZF Lenksysteme
Enter Phone Number : 0127488649
Supplied Part's ID : MCE, S5
Enter Supplied Amount : 89
Enter Name : Blaupunkt
Enter Phone Number : 01119697853
Supplied Part's ID : CV
Enter Supplied Amount : 78

```

Name	Phone Number	Part's ID	Total Supplied Amount
Volkswagen Group	0164158649	ACE	107
ZF Lenksysteme	0127488649	MCE, S5	89
Blaupunkt	01119697853	CV	78

Figure 44

Figure 44 shows that the writing code of supplier information with a function named supplierInfo showing all the output in the text file on the right of it.

```

Enter 1 to continue , 0 to end : 1
Enter Your Option : 2
1. To add new parts
    A. vGolf
    B. vGolf_R
    C. vGolf_G
2. To update parts
    A. vGolf
        a. Gear Box
        b. Clutch
        c. Multi-Cylinder Engine
        d. Air-Cooled Engine
        e. Steering
    B. vGolf_R
        a. Gear Box
        b. Clutch
        c. Multi-Cylinder Engine
        d. Air-Cooled Engine
        e. Steering
    C. vGolf_G
        a. Gear Box
        b. Clutch
        c. Multi-Cylinder Engine
        d. Air-Cooled Engine
        e. Steering
Enter 1 to record new part , 2 to Update Part : 2
Enter Which Warehouse : A
Select Which Part to Update : e
Enter Steering Amount : 9
ACEV4  Air-Cooled Engine      34
CV2    Clutch 88
GBV1   Gear Box 8
MCEV3  Multi-Cylinder Engine 45
SV5    Steering 9
NEWID  NEWPART 00

```

```

Enter 1 to continue , 0 to end : 1
Enter Your Option : 2
1. To add new parts
    A. vGolf
    B. vGolf_R
    C. vGolf_G
2. To update parts
    A. vGolf
        a. Gear Box
        b. Clutch
        c. Multi-Cylinder Engine
        d. Air-Cooled Engine
        e. Steering
    B. vGolf_R
        a. Gear Box
        b. Clutch
        c. Multi-Cylinder Engine
        d. Air-Cooled Engine
        e. Steering
    C. vGolf_G
        a. Gear Box
        b. Clutch
        c. Multi-Cylinder Engine
        d. Air-Cooled Engine
        e. Steering
Enter 1 to record new part , 2 to Update Part : 2
Enter Which Warehouse : B
Select Which Part to Update : b
Enter Clutch_R Amount : 3
ACEVR4  Air-Cooled_R Engine 67
CVR2    Clutch_R 3
GBVR1   Gear Box_R 45
MCEVR3  Multi-Cylinder_R Engine 90
SVR5    Steering_R 9
NEWID1  NEWPART ! 00
NEWID2  NEWPART 00

```

vGolf - Notepad		
File	Edit	Format View Help
ACEV4	Air-Cooled Engine	34
CV2	Clutch	88
GBV1	Gear Box	8
MCEV3	Multi-Cylinder Engine	45
SV5	Steering	9

vGolf_R - Notepad		
File	Edit	Format View Help
ACEVR4	Air-Cooled_R Engine	67
CVR2	Clutch_R	3
GBVR1	Gear Box_R	45
MCEVR3	Multi-Cylinder_R Engine	90
SVR5	Steering_R	9

Figure 45

```

Enter 1 to continue , 0 to end : 1
Enter Your Option : 2
1. To add new parts
    A. vGolf
    B. vGolf_R
    C. vGolf_G
2. To update parts
    A. vGolf
        a. Gear Box
        b. Clutch
        c. Multi-Cyclinder Engine
        d. Air-Cooled Engine
        e. Steering
    B. vGolf_R
        a. Gear Box
        b. Clutch
        c. Multi-Cyclinder Engine
        d. Air-Cooled Engine
        e. Steering
    C. vGolf_G
        a. Gear Box
        b. Clutch
        c. Multi-Cylinder Engine
        d. Air-Cooled Engine
        e. Steering
Enter 1 to record new part , 2 to Update Part : 2
Enter Which Warehouse : c
Select Which Part to Update : e
Enter Steering_G Amount : 6
ACEVG4  Air-Cooled Engine      34
CVG2    Clutch_G             456
GBVG1   Gear Box_G           78
MCEVG3  Multi-Cylinder_G Engine 34
SVG5    Steering_G            6

```

vGolf_G - Notepad

ACEVG4	Air-Cooled Engine	34	
CVG2	Clutch_G	456	
GBVG1	Gear Box_G	78	
MCEVG3	Multi-Cylinder_G Engine	34	
SVG5	Steering_G	6	

Figure 46

Figure 45 and 46 show one of the updated parts in each ware houses.

```

Enter 1 to continue , 0 to end : 1
Enter Your Option : 2
1. To add new parts
    A. vGolf
    B. vGolf_R
    C. vGolf_G
2. To update parts
    A. vGolf
        a. Gear Box
        b. Clutch
        c. Multi-Cyclinder Engine
        d. Air-Cooled Engine
        e. Steering
    B. vGolf_R
        a. Gear Box
        b. Clutch
        c. Multi-Cyclinder Engine
        d. Air-Cooled Engine
        e. Steering
    C. vGolf_G
        a. Gear Box
        b. Clutch
        c. Multi-Cylinder Engine
        d. Air-Cooled Engine
        e. Steering
Enter 1 to record new part , 2 to Update Part : 1
Enter Which Warehouse : A
Enter 1 to add new Part, 0 to end : 1
Enter Part's ID : NEWID
Enter Part : NEWPART
Enter Amount : 00
Enter 1 to continue add new Part, 0 to end : 0

```

vGolf - Notepad

ACEV4	Air-Cooled Engine	34	
CV2	Clutch	88	
GBV1	Gear Box	8	
MCEV3	Multi-Cylinder Engine	45	
SV5	Steering	9	
NEWID	NEWPART	00	

```

Enter 1 to continue , 0 to end : 1
Enter Your Option : 2
1. To add new parts
    A. vGolf
    B. vGolf_R
    C. vGolf_G
2. To update parts
    A. vGolf
        a. Gear Box
        b. Clutch
        c. Multi-Cylinder Engine
        d. Air-Cooled Engine
        e. Steering
    B. vGolf_R
        a. Gear Box
        b. Clutch
        c. Multi-Cylinder Engine
        d. Air-Cooled Engine
        e. Steering
    C. vGolf_G
        a. Gear Box
        b. Clutch
        c. Multi-Cylinder Engine
        d. Air-Cooled Engine
        e. Steering
Enter 1 to record new part , 2 to Update Part : 1
Enter Which Warehouse : B
Enter 1 to add new Part, 0 to end : 1
Enter Part's ID : NEWID1
Enter Part : NEWPART !
Enter Amount : 00
Enter 1 to continue add new Part, 0 to end : 1
Enter Part's ID : NEWID2
Enter Part : NEWPART
Enter Amount : 00
Enter 1 to continue add new Part, 0 to end : 0

```

```

Enter 1 to continue , 0 to end : 1
Enter Your Option : 2
1. To add new parts
    A. vGolf
    B. vGolf_R
    C. vGolf_G
2. To update parts
    A. vGolf
        a. Gear Box
        b. Clutch
        c. Multi-Cylinder Engine
        d. Air-Cooled Engine
        e. Steering
    B. vGolf_R
        a. Gear Box
        b. Clutch
        c. Multi-Cylinder Engine
        d. Air-Cooled Engine
        e. Steering
    C. vGolf_G
        a. Gear Box
        b. Clutch
        c. Multi-Cylinder Engine
        d. Air-Cooled Engine
        e. Steering
Enter 1 to record new part , 2 to Update Part : 1
Enter Which Warehouse : C
Enter 1 to add new Part, 0 to end : 1
Enter Part's ID : NEWID3
Enter Part : NEWPART
Enter Amount : 00
Enter 1 to continue add new Part, 0 to end : 1
Enter Part's ID : NEWID4
Enter Part : NEWPART
Enter Amount : 00
Enter 1 to continue add new Part, 0 to end : 0

```

vGolf_R - Notepad

ACEVR4	Air-Cooled_R Engine	67
CVR2	Clutch_R	3
GBVR1	Gear Box_R	45
MCEVR3	Multi-Cylinder_R Engine	90
SVR5	Steering_R	9
NEWID1	NEWPART !	00
NEWID2	NEWPART 00	

vGolf_G - Notepad

ACEVG4	Air-Cooled Engine	34
CVG2	Clutch_G	456
GBVG1	Gear Box_G	78
MCEVG3	Multi-Cylinder_G Engine	34
SVG5	Steering_G	6
NEWID3	NEWPART 00	
NEWID4	NEWPART 00	

Figure 47

Pictures above shows adding new parts into each ware houses.

Enter 1 to continue , 0 to end : 1		
Enter Your Option : 5		
ZF Lenksysteme Gear Box		
ZF Lenksysteme Multi-Cylinder Engine		
Enter 1 to continue , 0 to end : 1		
Enter Your Option : 7		
To Print Which Section : A		
SV5 Steering 56		Enter 1 to continue , 0 to end : 1
SVR5 Steering_R 9		Enter Your Option : 7
SVG5 Steering_G 34		To Print Which Section : B
		MCEV3 Multi-Cylinder Engine 45
		ACEV4 Air-Cooled Engine 34
		MCEVR3 Multi-Cylinder_R Engine 90
Enter 1 to continue , 0 to end : 1		
Enter Your Option : 7		
To Print Which Section : C		
GBV1 Gear Box 8		ACEVR4 Air-Cooled_R Engine 67
CV2 Clutch 88		MCEVG3 Multi-Cylinder_G Engine 34
GBVR1 Gear Box_R 45		ACEVG4 Air-Cooled Engine 34
CVR2 Clutch_R 89		
GBVG1 Gear Box_G 78		
CVG2 Clutch_G 456		

Figure 48

These pictures show to check the amount and part in each section. The 'To print which section' is mentioning which section to print.

Enter 1 to continue , 0 to end : 1	Enter 1 to continue , 0 to end : 1
Enter Your Option : 8	Enter Your Option : 8
Check Which Warehouse : A	Check Which Warehouse : C
ACEV4 Air-Cooled Engine 34	ACEVG4 Air-Cooled Engine 34
CV2 Clutch 88	CVG2 Clutch_G 456
GBV1 Gear Box 8	GBVG1 Gear Box_G 78
MCEV3 Multi-Cylinder Engine 45	MCEVG3 Multi-Cylinder_G Engine 34
SV5 Steering 9	SVG5 Steering_G 6
NEWID NEWPART 00	
Enter 1 to continue , 0 to end : 1	
Enter Your Option : 8	
Check Which Warehouse : B	
ACEVR4 Air-Cooled_R Engine 67	NEWID3 NEWPART 00
CVR2 Clutch_R 3	NEWID4 NEWPART 00
GBVR1 Gear Box_R 45	
MCEVR3 Multi-Cylinder_R Engine 90	
SVR5 Steering_R 9	
NEWID1 NEWPART ! 00	
NEWID2 NEWPART 00	

Figure 49

Figure 49 shows to check the total available quantity in each ware houses. Each line represents the line in each text file.

Enter 1 to continue , 0 to end : 1
Enter Your Option : 5
ZF Lenksysteme Gear Box
ZF Lenksysteme Multi-Cylinder Engine

Figure 50

Figure 50 shows to print more than one part supplied by suppliers.

```

Enter 1 to continue , 0 to end : 1
Enter Your Option : 9
Check Which Warehouse : A
Amount sufficient
Amount sufficient
GBV1   Gear Box      8
Amount sufficient
SV5    Steering       9
NEWID  NEWPART 00
-
```

Figure 51

```

Enter 1 to continue , 0 to end : 1
Enter Your Option : 9
Check Which Warehouse : B
Amount sufficient
CVR2   Clutch_R      3
Amount sufficient
Amount sufficient
SVR5   Steering_R     9
NEWID1 NEWPART !     00
NEWID2 NEWPART 00
Enter 1 to continue , 0 to end : 1
Enter Your Option : 9
Check Which Warehouse : C
Amount sufficient
Amount sufficient
Amount sufficient
Amount sufficient
SVG5   Steering_G     6
-
```

Figure 51 show to check if the item is below 10 in each ware houses. All the alphabet in picture refers to warehouses. A is vGolf while B is vGolf_R and C is vGolf_G.

```

Enter 1 to continue , 0 to end : 1
Enter Your Option : 10
Select Section to Search : A
Type What You Want to Search : engine
ACEV4   Air-Cooled Engine   34
MCEV3   Multi-Cylinder Engine 45
-
```

```

Enter 1 to continue , 0 to end : 1
Enter Your Option : 10
Select Section to Search : B
Type What You Want to Search : steering
SVR5   Steering_R      9
Enter 1 to continue , 0 to end : 1
Enter Your Option : 10
Select Section to Search : C
Type What You Want to Search : box
GBVG1  Gear Box_G      78
Enter 1 to continue , 0 to end : 0
-
```

```

Enter 1 to continue , 0 to end : 1
Enter Your Option : 10
Select Section to Search : D
Type What You Want to Search : zf lenksysteme
Name : ZF Lenksysteme Phone Number : 0127488649
Enter 1 to continue , 0 to end : 1
Enter Your Option : 10
Select Section to Search : E
Type What You Want to Search : zf lenksysteme
ZF Lenksysteme Gear Box
ZF Lenksysteme Multi-Cylinder Engine
Enter 1 to continue , 0 to end : 0
-
```

Part's ID :	MCE, S5 Total Supplied Amount :	89
-------------	---------------------------------	----

Figure 52

Pictures in figure 52 shows to search item from five text file ranging from A to E. A is vGolf text file, B is vGolf_R text file, C is vGolf_G text file while D is Supplier text file and the last is SupplierMoreOne text file showing who is supplying more than one part.

Conclusion

Having this program to help recording all the information is undoubtedly helpful for the person-in-charge to refers instead of looking at the paper one by one consuming massive amount of time. Manufacturers are also able to check out all the possible output from this program by printing the information. Thus, manufacturers are able to recoding data and information efficiency.

References

Enrico , B. (2018). *colswagennewsroom*. Retrieved September 05, 2020, from
<https://www.volkswagen-newsroom.com/en/press-contacts>