```
#  zabudowa w buforach


from PyQt5.QtGui import *
from PyQt5.QtCore import *
from qgis.core import *
from qgis.utils import *
from csv import *


workPath = "B:\\Python_QGIS\\aQGIS_Hel_2018\\Jacka\\moje_J\\D2_J_AW\\"
buf_in =
QgsVectorLayer("B:\\Python_QGIS\\aQGIS_Hel_2018\\Jacka\\moje_J\\D2_J_AW\\buf_merge.shp",
"Bufory_in", "ogr")
if not buf_in.isValid():
    print("Layer failed to load!")
zab_in =
QgsVectorLayer('B:/Python_QGIS/aQGIS_Hel_2018/Jacka/dane2_18/urban_cover_Krak_zab3.shp',
"zabudowa_in", "ogr")
if not zab_in.isValid():
    print("Layer failed to load!")

#dodanie kolumny z ID do buforów, bo takowej w mojej warstwie brakowało
w1 = workPath + "w1_buf_ID.shp"
processing.run("qgis:fieldcalculator",
{'INPUT':buf_in,'FIELD_NAME':'id_buf','FIELD_TYPE':1,'FIELD_LENGTH':10,'FIELD_PRECISION':3,'NE
W_FIELD':True,'FORMULA':' @row_number ','OUTPUT':w1})

#intersect buf + zabudowa: część wspólna bufora i zabudowy z informacją z obydwu warstw
w2 = workPath + "w2_intBufZab.shp"
processing.run("native:intersection",
{'INPUT':w1,'OVERLAY':zab_in,'INPUT_FIELDS':[],'OVERLAY_FIELDS':['CODE2012','KLASA'],'OUTPUT':
w2})

#dodanie kolumny z powierzchnią części wspólnej zabudowy w buforze
w3 = workPath + "w3_areaBufZab.shp"
processing.run("qgis:exportaddgeometrycolumns", {'INPUT':w2,'CALC_METHOD':0,'OUTPUT':w3})

#wyliczenie sumy kawałków w zabudowy w jednym buforze - można dissolve zabudowy na początku
tab1 = workPath + "tab1_statBufZabT.gpkg"
processing.run("qgis:statisticsbycategories",
{'INPUT':w3,'VALUES_FIELD_NAME':'area','CATEGORIES_FIELD_NAME':['id_buf'],'OUTPUT':tab1})

#połączenie tabeli -  suma powierzchni z warstwą oryginalnych buforów
w4 =  workPath + "w4_join_bufID.shp"
processing.run("native:joinattributestable",
{'INPUT':w1,'FIELD':'id_buf','INPUT_2':tab1,'FIELD_2':'id_buf','FIELDS_TO_COPY':['id_buf','cou
nt','sum'],'METHOD':1,'DISCARD_NONMATCHING':False,'PREFIX':'','OUTPUT':w4})

#dodanie kolumny z powierzchnią całego bufora
w5 = workPath + "w5_areaBufJoin.shp"
processing.run("qgis:exportaddgeometrycolumns", {'INPUT':w4,'CALC_METHOD':0,'OUTPUT':w5})

#wyliczenie procentu zabudowy w danym buforze
w6 = workPath + "w6_buf_proc.shp"
processing.run("qgis:fieldcalculator",
{'INPUT':w5,'FIELD_NAME':'proc','FIELD_TYPE':0,'FIELD_LENGTH':10,'FIELD_PRECISION':3,'NEW_FIEL
D':True,'FORMULA':'"sum"/"area"*100','OUTPUT':w6})

#usunięcie niepotrzebnych kolumn
w7 = workPath + "w7_buf_proc_wynik.shp"
processing.run("qgis:deletecolumn",
{'INPUT':w6,'COLUMN':['dystBuf','path','id_buf_2','count','perimeter'],'OUTPUT':w7})


print("ok")
```