```python
###########################################################################
# Description:
#        The first step that this script will do is clip the river,
#    property, roads, and the building shapefiles to the study area
#    (named AnnapolisRoyal_Clip2015.shp). The second step is to create
#    the slope for this study area; this is done by using the create
#    tin (3D Analysis)tool and take that output (seeing as it is just
#    a temporary file) and run it through the surface slope (3D Analysis)
#    tool to create a shapefile. The third step is to run all of the
#    clipped shapefiles from step one through the Make Feature Layer tool;
#    this will create temporary files to work on. The fourth step is to
#    run a Select Layer by Attribute on the Property_Layer (created in
#    the previous step); this is a new selection and it is selecting all
#    the areas that are between 6 and 30 hectares. This selection is also
#    selecting out all the water segments, road segments, and rail road
#    segments that are not needed in the perperty selection. The fifth step
#    is to run another Select Layer By Attribute by this time on the
#    Roads_Layer. This is a new selection and it is selecting all the
#    roads Highway 1, Highway 201, and other roads.
#    The sixth step will be a Select Layer By Location is tool selecting
#    all the properties that are within a distance of 100 meters of the
#    roads that were selected in the previous step. The seventh step is
#    run another select layer by attribute on the slope that was created
#    selecting any slope that is greater than 7, the areas that have a
#    slope of 7 or greater are areas that we wish to stay away from.
#    The next step is to select layer by attribute on the properties
#    that mostly contains the slope 7 or greater, this unselects those
#    properties and leaves only the ones that have a slope less than 7.
#    The following step is to unselect those properties in which have
#    buildings located on them. Then the second to last step is to use
#    the Copy Features tool and take the Property_Layer, which was created
#    using the Make Feature Layer, and make it a shapefile again. The output
#    from this tool will be called Suitable_Properties.shp. Then the final
#    step is to use the Get Count Tool and make it print the number of
#    properties that have selected out that fit what we are looking for.
#
#
# arcpy.AddMessage statements have been added throughout the script
#
# Name: NewSchoolSelection_Katie.py
# Created by: Katie Chute
# November 2015
#
# Geoprocessing and Problem Solving 1 - Week 09
#
###########################################################################
# imports the the arcpy site package.

import arcpy

#This Script was created by Katie Chute

#This is checking out the 3D Analysis Extension within ArcMap

arcpy.CheckOutExtension("3D")

#Adds a message saying 3D Analysis Checked out (Same as a print statement)

arcpy.AddMessage("3D Analysis Checked out")

#This imports ArcGIS Envirement Settings

from arcpy import *

#This sets which folder that all the data will be found and also placed within
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arcpy.env.workspace = "D:/Python/Data"

#Variables Listing
Workspace= arcpy.GetParameter (0)
clip_area= arcpy.GetParameter (1)
##clip_area= "AnnapolisRoyal_Clip2015.shp"
Suitable_Properties= arcpy.GetParameter(2)
##Suitable_Properties="Suitable_Properties.shp"
Rivers_C= "Rivers_C.shp"
Rivers= "Rivers.shp"
Property_C= "Property_C.shp"
Property="Property.shp"
Roads_C= "Roads_C.shp"
Roads= "Roads.shp"
Building_Clip= "Building_Clip.shp"
Building= "Building.shp"
Tin= "Tin.shp"
Slope= "Slope.shp"


#This syntax modifies enviroment settings to overwrite existing files within the folder you are
working within

arcpy.env.overwriteOutput = True

#Adds a message saying 3D Analysis Checked out (Same as a print statement)

arcpy.AddMessage("setting Enviroments Complete")

#Error handling
#This syntax states try this and if it works print the AddMessage statment in the expect syntax,
but if there is an error print where the error is

try:
    arcpy.Clip_analysis("Rivers_C.shp", clip_area, "D:/Python/Data/Rivers.shp")
    arcpy.Clip_analysis("Property_C.shp", clip_area, "D:/Python/Data/Property.shp")
    arcpy.Clip_analysis("Roads_C.shp",clip_area,"D:/Python/Data/Roads.shp")
    arcpy.Clip_analysis("Building_Clip.shp", clip_area, "D:/Python/Data/Building.shp")

except:
    arcpy.GetMessages(2)
    arcpy.AddMessage("Clipping of Rivers, Property, Roads and Buildings Complete")

# This creates a tin that can then be run through the Slope tool.

arcpy.CreateTin_3d("D:/Python/Data/tin",
"PROJCS['NAD_1983_UTM_Zone_20N',GEOGCS['GCS_North_American_1983',DATUM['D_North_American_1983',SPHERO
ID['GRS_1980',6378137.0,298.257222101]],PRIMEM['Greenwich',0.0],UNIT['Degree',0.0174532925199433]],PR
OJECTION['Transverse_Mercator'],PARAMETER['False_Easting',500000.0],PARAMETER['False_Northing',0.0],P
ARAMETER['Central_Meridian',-63.0],PARAMETER['Scale_Factor',0.9996],PARAMETER['Latitude_Of_Origin',0.
0],UNIT['Meter',1.0]]","D:/Python/Data/Line.shp Shape.Z Hard_Line ZVALUE","DELAUNAY")

#Adds a message saying 3D Analysis Checked out (Same as a print statement)

arcpy.AddMessage("Create Tin Complete")

# Replace a layer/table view name with a path to a dataset (which can be a layer file) or create
the layer/table view within the script
# The following inputs are layers or table views: "Tin"

arcpy.SurfaceSlope_3d("tin","D:/Python/Data/Slope.shp","DEGREE","","SlopeCode","1","0")

#Adds a message saying 3D Analysis Checked out (Same as a print statement)
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arcpy.AddMessage("Surface Slope Complete")

#Error handling
#This syntax states try this and if it works print the AddMessage statment in the expect syntax,
but if there is an error print where the error is.

try:
    arcpy.MakeFeatureLayer_management("Property.shp","Property_Layer")
    arcpy.MakeFeatureLayer_management("Roads.shp","Roads_Layer")
    arcpy.MakeFeatureLayer_management("Slope.shp","Slope_Layer")
    arcpy.MakeFeatureLayer_management("Building.shp","Building_Layer")

except:
    arcpy.GetMessage(2)
    arcpy.AddMessage("Make Feature Layer Complete")


# Replace a layer/table view name with a path to a dataset (which can be a layer file) or create
the layer/table view within the script
# The following inputs are layers or table views: "Property"

arcpy.SelectLayerByAttribute_management("Property_Layer","NEW_SELECTION", """("Shape_ha" >= 6 AND
"Shape_ha" <= 30) AND "SOURCE_ID" NOT LIKE 'WATER_SEG' AND "SOURCE_ID" NOT LIKE 'ROAD_SEG' AND
"SOURCE_ID" NOT LIKE 'RAIL_SEG' AND "SOURCE_ID" NOT LIKE '104650550L' AND "SOURCE_ID" NOT LIKE
'DT?' AND "SOURCE_ID" NOT LIKE '024770540L'""")

#Adds a message saying 3D Analysis Checked out (Same as a print statement)

arcpy.AddMessage ("Property Select Completed")

# Replace a layer/table view name with a path to a dataset (which can be a layer file) or create
the layer/table view within the script
# The following inputs are layers or table views: "Roads_Clip"

arcpy.SelectLayerByAttribute_management("Roads_Layer", "NEW_SELECTION", """"FEAT_CODE" LIKE '%CO%'
OR "FEAT_CODE" LIKE '%LO%' OR "FEAT_CODE" LIKE '%DATY%'""")

#Adds a message saying 3D Analysis Checked out (Same as a print statement)

arcpy.AddMessage ("Roads Select Completed")

# Replace a layer/table view name with a path to a dataset (which can be a layer file) or create
the layer/table view within the script
# The following inputs are layers or table views: "Property", "Roads_Clip"

arcpy.SelectLayerByLocation_management("Property_Layer","WITHIN_A_DISTANCE","Roads_Layer","100
Meters","SUBSET_SELECTION","NOT_INVERT")

#Adds a message saying 3D Analysis Checked out (Same as a print statement)

arcpy.AddMessage ("Property Select Location Completed")

#This Script was created by Katie Chute

# Replace a layer/table view name with a path to a dataset (which can be a layer file) or create
the layer/table view within the script
# The following inputs are layers or table views: "Slope"

arcpy.SelectLayerByAttribute_management("Slope_Layer","NEW_SELECTION","""SlopeCode" >=  7""")

#Adds a message saying 3D Analysis Checked out (Same as a print statement)

arcpy.AddMessage ("Slope Select Completed")

# Replace a layer/table view name with a path to a dataset (which can be a layer file) or create
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the layer/table view within the script
# The following inputs are layers or table views: "Property", "Slope"

arcpy.SelectLayerByLocation_management("Property_Layer","COMPLETELY_WITHIN","Slope_Layer","",
"REMOVE_FROM_SELECTION","")

#Adds a message saying 3D Analysis Checked out (Same as a print statement)

arcpy.AddMessage ("Property Select Location With Slope Completed")

# Replace a layer/table view name with a path to a dataset (which can be a layer file) or create
the layer/table view within the script
# The following inputs are layers or table views: "Property", "Building_Clip"

arcpy.SelectLayerByLocation_management("Property_Layer", "CONTAINS", "Building_Layer", "",
"SUBSET_SELECTION", "INVERT")

#Adds a message saying 3D Analysis Checked out (Same as a print statement)

arcpy.AddMessage ("Property Select Location With Building Completed")

# Replace a layer/table view name with a path to a dataset (which can be a layer file) or create
the layer/table view within the script
# The following inputs are layers or table views: "Properties_Layer"

arcpy.CopyFeatures_management("Property_Layer","D:/Python/Data/Suitable_Properties.shp","","0","0",
"0")

#This Get Count Management gets the number of attributes that are found within the newly created
shapefile.
#The second part states the results come from this newly created shapefie.
#The the count section states that the integer comes from the results.getoutput

arcpy.GetCount_management(Suitable_Properties)
result= arcpy.GetCount_management (Suitable_Properties)
count= int(result.getOutput(0))

#Then to get the number to show in the window this message needs to be added.
#The word count needs to be lower case and with out quotation marks

arcpy.AddMessage(count)

arcpy.AddMessage("The number above is the number of Suitable Properties to build a new school in
the Annapolis Royal Area")
#This shows that the 3D Analysis is being returned or unchecked.

arcpy.CheckInExtension("3D")

#Adds a message saying 3D Analysis Checked out (Same as a print statement)

arcpy.AddMessage("Script Complete")

#This Script was created by Katie Chute
```