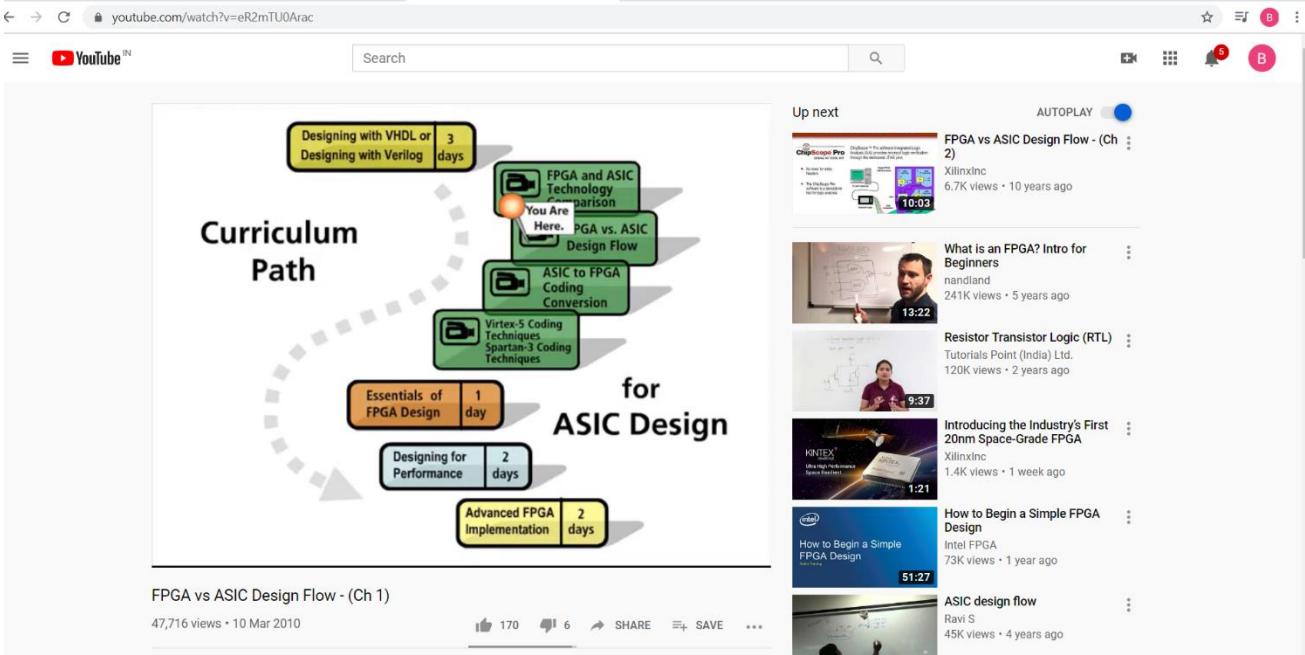


# DAILY ASSESSMENT FORMAT

<b>Date:</b>	1-06-2020	<b>Name:</b>	BINDUSHRI
<b>Course:</b>	Digital design using HDL	<b>USN:</b>	4AL17EC011
<b>Topic:</b>	1.INDUSTRY APPLICATION OF FPGA 2.FPGA VS ASSIC DESIGN FLOW 3.FPGA BUSINESS FUNDAMENTALS 4.TASK1		6 <sup>th</sup> A
<b>Github Repository:</b>	Bindushri		

FORENOON SESSION DETAILS	
 <p>The screenshot shows a YouTube video player with a video titled "FPGA vs ASIC Design Flow - (Ch 1)". The video has 47,716 views and was uploaded on 10 Mar 2010. Below the video, there is a "Curriculum Path" diagram for ASIC Design. The path consists of several green and yellow boxes connected by arrows, representing a sequence of learning modules. The modules include:</p> <ul style="list-style-type: none"> <li>Designing with VHDL or Designing with Verilog (3 days)</li> <li>FPGA and ASIC Technology Comparison</li> <li>You Are Here: PGA vs. ASIC Design Flow</li> <li>ASIC to FPGA Coding Conversion</li> <li>Virtex-5 Coding Techniques Spartan-3 Coding Techniques</li> <li>Essentials of FPGA Design (1 day)</li> <li>Designing for Performance (2 days)</li> <li>Advanced FPGA Implementation (2 days)</li> </ul> <p>On the right side of the video player, there is a "Up next" section displaying several recommended videos related to FPGA and ASIC design.</p>	

1-08-2020

SUBJECT: DIGITAL DESIGN UG100, HOD

## Industry Applications of FPGAs

- 1) APP Business fundamentals
- 2) Different hardware like Signo.

ASIC	ASSP	FPGA
→ specific to one company	→ Specific function	→ flexible & customizable
→ high up-front cost	→ general enough that anyone can purchase	→ IP is off the shelf
→ large volume		magmatic lottery can stick on board

## ASIC / ASSP advantages / Disadvantages

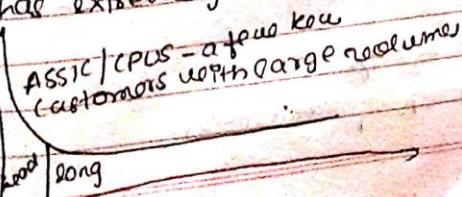
PROS	CONS
→ low cost per unit	→ high non-recurring engineering cost
→ low power consumption	→ not flexible - cannot be upgraded once hardened
→ High performance / clock speed	
→ Small unit size	→ complex design flow

## Why FPGAs?

- FPGA is reprogrammable.
- FPGA is open product longevity
- reduced time-to-market
- market size optimized

## Broad customer base

- FPGA has extremely broad customer base.



Reduced time-to-market :- Development and prototyping

On FPGAs can reduce TTM especially in emerging markets where standard have not yet been defined

e.g.: ADAS, 5G

\* FPGA is traditionally used for prototyping

\* ASIC is ~~structured~~

Software Enables Hardware

\* Intel bought InfiniBand in Quartus because it is paramount to the success of their FPGAs

\* In order to play in the FPGA market companies

need to first have good tools

→ FPGA vs ASIC Design flow :-

\* there are 5 areas to get familiar with FPGA design techniques  
These are 3 major for technology compensation &  
one 1 unique for Design flow.

\* 2 for coding conversion

→ Design flow :- ASIC & FPGA design and implementation  
methodologies differ somewhat

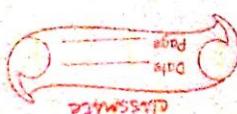
• Xilinx FPGAs provide for reduced design time  
and faster bringup.

→ FPGA Basics - A look under the hood

\* Not working - software → But developing a digital circuit using a tool to tell the chip how to configure itself

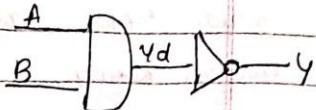
\* plan for lot of bugs

\* application specific requirements



TASK 1  
Create a working code to implement AND gate Please  
use different styles

→ gatelevel:  
module AND2(output Y, input A, B);  
wire Yd;  
and (Yd, A, B);  
not (Y, Yd);  
endmodule;



Data-flow modeling

$$\text{Boolean eqn} \rightarrow Y = A \cdot B' \circ \sim(A \wedge B)$$

module AND2\_dataflow (output Y, input A, B);  
assign Y = \sim(A \wedge B);  
endmodule.

Behavioural Modeling

A	B	Y (A and B)
0	0	1
0	1	1
1	0	1
1	1	0

$$\rightarrow Y = (A \wedge B)' \text{ or } Y = (A \cdot B)'$$

module AND2\_behavioural (output reg Y, input A, B);

always @ (A or B) begin

if (A == 1'b1 & B == 1'b1) begin

$$Y = 1'b0$$

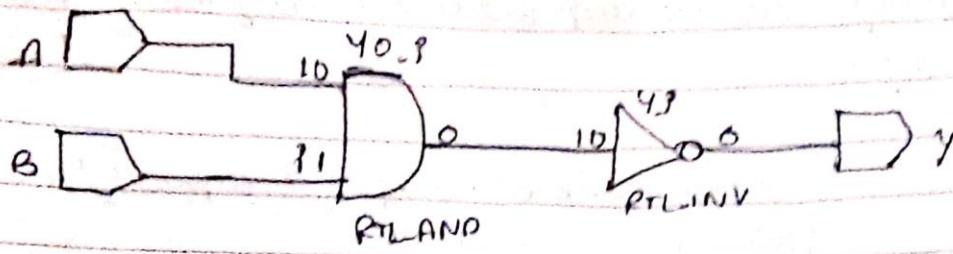
else

$$Y = 1'b1;$$

end

endmodule.

Digital schematic of the AND2 gate



include "NAND\_Q\_behavioral.v"

module NAND\_Q\_behavioral\_tb;

reg A,B;

wire Y;

NAND\_Q\_behavioral Instanc(y,A,B);

initial begin

A=0; B=0;

#1 A=0; B=1;

#1 A=1; B=0;

#1 A=1; B=1;

end

endtask begin

\$monitor( "at \$t | A=%d | B=%d | Y=%d",

\$time, A, B, Y);

\$dumpfile("dump.vcd");

\$dumpvars();

end

endmodule

X — X — X — X

**Date:1june2020**  
**Course: python**  
**Topic:sec 28-29**

**Name:Bindushri**  
**USN:4AL17EC011**  
**Sem&Sec:6<sup>th</sup> A**

**AFTERNOON SESSION DETAILS**

udemy.com/course/the-python-mega-course/learn/lecture/9439102#overview

Course content

Section 28: Interactive Data Visualization with Bokeh

2 / 17 | 58min

- 226. Introduction to Bokeh 2min
- 227. Installing Bokeh 1min
- 228. Your First Bokeh Plot 14min
- 229. Plotting Triangles and Circle Glyphs (Practice) 1min
- 230. Solution 1min
- 231. Using Bokeh with Pandas 5min
- 232. Plotting Education Data (Practice) 1min
- 233. Solution 1min
- 234. Note on Loading Excel Files

Resources

About this course

A complete Python course for both beginners and intermediates! Master Python 3 by making desktop, web, and mobile apps.

By the numbers

Skill level: All Levels

Students: 178412

Lectures: 282

Video: 26.5 total hours

✓ 28/10/2020 Interactive Data Visualization

using the bokeh python library

Pip install bokeh. [to build a graph]

In the working path [folder] → open a cmd  
and type the pip install jupyter notebook

→ Jupyter notebook. [Python 3]

In[] # making a basic bokeh graph.  
# Importing Bokeh.

#

from bokeh.plotting import figure

from bokeh.io import output\_file, show

# prepare some data.

X = [1, 2, 3, 4, 5]

Y = [6, 7, 8, 9, 10]

# prepare the output file.

output\_file("Line.html")

# create a figure object

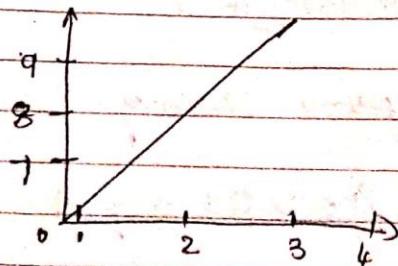
f = figure()

# create line plot

f.line(x, y)

show(f)

ctrl → ctrl enter → ~~ctrl g~~



\* Plotting triangles & circles glyphs

# Making a basic Bokeh line graph.

# Importing Bokeh

from bokeh.plotting import figure

from bokeh.io import output\_file, show

# prepare some data

$$x = [3, 7.5, 10]$$

$$y = [3, 6, 9]$$

# prepare the output file

output\_file ("line.html")

# create a figure object

f = figure()

# create line plot

f. to\_pango(x, y)

# write the plot to the figure object

show(f)

2# snippet producing the circle based plot

# making above Bokeh line graph

# importing Bokeh

from bokeh.plotting import figure

from bokeh.io import output\_file, show

# prepare some data

$$x = [3, 7.5, 10]$$

$$y = [3, 6, 9]$$

# prepare the file

output\_file ("line.html")

# create a figure object

f = figure()

# create line plot

f. circle(x, y)

show(f)

~~#~~ Copy the code twice.

→ Making a basic Bezier like graph  
# Importing bekerl and pandas  
from bekerl.plotting import figure  
from bekerl import output\_file, show  
import pandas

# Prepare some data

df = pandas.read\_csv("data.csv")

X = df["X"]

Y = df["Y"]

# Prepare the output file

output\_file("Line\_Picou.csv.html")

# Create a figure object

f = figure()

# Create the plot

f.line(X, Y)

# Output the plot to the figure object

Show(f)

→ O/P → graph

To check the O/P suitable then

df

O/P :-	X	Y
0	6	
1	7	
2	6	
3	9	
4	10	

## Plotting Education Data

from bokeh.plotting import figure  
from bokeh.io import output\_file, show  
import pandas

# prepare some data.

```
df = pandas.read_csv("http://pythontutor.com/data/  
bachelors.csv")
```

```
x = df["Year"]
```

```
y = df["Engineering"]
```

# prepare two output files

```
output_file("Line_from_bachelors.html")
```

# create a figure object

```
f = figure()
```

# create line plot

```
f.line(x,y)
```

```
show(f)
```

→ handling Excel files :- pp excel xlrd

import pandas

from bokeh.plotting import figure, output\_file, show

```
P = figure(plot_width=500, plot_height=400, tools=  
":pan", toolbar=None)
```

```
p.title.text = "cool Data"
```

```
p.title.text_color = "gray"
```

```
p.title.text_font = "times"
```

classmate  
Date \_\_\_\_\_  
Page \_\_\_\_\_

```
p.title.text font-style = "bold"  
p.xaxis minor tick line color = None  
p.yaxis minor tick line color = None  
p.xaxis axis_label = "Date"  
p.yaxis axis_label = "Intensity"
```

```
p.plot([1, 2, 3], [4, 5, 6])  
output_file("graph.html")  
show(p)
```

scraping web scraping with python beautiful soup

extracting information from web pages

→ Jupyter notebook

conda install requests → pip install requests  
pip install bs4

In[7] import requests.

```
from bs4 import BeautifulSoup
```

request

```
r=requests.get ("https://pythonhow.com/  
example.html")
```

type(r)

~~content=r.content~~

~~print(r.text)~~

```
Scou = BeautifulSoup(c, "html.parser")
```

```
all=Scou.findall("div", {"class": "list"})  
type(all)
```

all

for

all [obj].find\_all ("h2") [obj].text

for item in all:

for item in all:

print(item.find\_all("p") [obj].text)

## Python for image and video processing:

### 1) loading, displaying, resizing and writing images

```
import cv2
```

```
img=cv2.imread("galaxy.jpg",0)
```

```
print(type(img))
```

```

print(img)
print(img.shape)
print(img.ndim)

resized_image=cv2.resize(img,(int(img.shape[1]/2),int(img.shape[0]/2)))
cv2.imshow("Galaxy",resized_image)
cv2.imwrite("Galaxy_resized.jpg",resized_image)
cv2.waitKey(0)
cv2.destroyAllWindows()

```

The screenshot shows the Visual Studio Code interface with the following details:

- File Menu:** File, Edit, Selection, View, Go, Run, Terminal, Help.
- OPEN EDITORS:** script.py (UNSAVED).
- EXPLORER:** Shows the file structure: UNTITLED (WORKSPACE) containing Loading.Displayin..., galaxy\_resized.jpg, galaxy.jpg, and script.py.
- EDITOR:** Displays the Python script code.
- OUTPUT:** Shows the output of the print statements and the result of cv2.resize.
- PROBLEMS:** 1 problem found.
- TERMINAL:** Shows the command "Python 3.8.3 32-bit" and other terminal icons.
- STATUS BAR:** Shows "Ln 14, Col 25" and the date "31-05-2020".
- Thumbnail Preview:** A small thumbnail of the resized image titled "Galaxy" is shown in the top right corner.

## 2)face-detector (single picture& complex picture)

```
import cv2
face_cascade = cv2.CascadeClassifier('haarcascade_frontalface_default.xml')

img=cv2.imread("news.jpg")
gray_img=cv2.cvtColor(img,cv2.COLOR_BGR2GRAY)

faces=face_cascade.detectMultiScale(gray_img,
scaleFactor=1.1,
minNeighbors=5)

for x,y,w,h in faces:
    img=cv2.rectangle(img,(x,y),(x+w,y+h),(0,255,0),3)

print(type(faces))
print(faces)

resized=cv2.resize(img,(int(img.shape[1]/3),int(img.shape[0]/3)))
cv2.imshow("Gray",resized)
cv2.waitKey(0)
cv2.destroyAllWindows()
```

File Edit Selection View Go Run Terminal Help script.py - Untitled (Workspace) - Visual Studio Code

EXPLORER OPEN EDITORS script.py photo.jpg news.jpg face detection > script.py > ...

```

1 import cv2
2 face_cascade = cv2.CascadeClassifier('haarcascade_frontalface_default.xml')
3
4 img=cv2.imread("photo.jpg")
5 gray_img=cv2.cvtColor(img,cv2.COLOR_BGR2GRAY)
6
7 faces=face_cascade.detectMultiScale(gray_img,
8 scaleFactor=1.1,
9 minNeighbors=5)
10
11 for x,y,w,h in faces:
12     img=cv2.rectangle(img,(x,y),(x+w,y+h),(0,255,0),3)
13
14 print(type(faces))
15 print(faces)
16
17 resized=cv2.resize(img,(int(img.shape[1]/3),int(img.shape[0]/3)))
18 cv2.imshow("Gray",resized)
19 cv2.waitKey(0)
20 cv2.destroyAllWindows()

```

UNTITLED (WORKSPACE) face detection haarcascade\_frontalface\_default.xml news.jpg photo.jpg script.py

PROBLEMS 1 OUTPUT TERMINAL DEBUG CONSOLE SQL CONSOLE Windows PowerShell Copyright (C) Microsoft Corporation. All rights reserved.

Try the new cross-platform PowerShell <https://aka.ms/pscore6>

PS C:\Users\hp\Desktop\face detection> python script.py

```
<class 'numpy.ndarray'>
[[152 84 384 384]]
```

OUTLINE TIMELINE

python 3.8.3 32-bit ① 0 Connect

File Edit Selection View Go Run Terminal Help script.py - Untitled (workspace) - Visual Studio Code

EXPLORER OPEN EDITORS script.py photo.jpg news.jpg face detection > script.py > ...

```

1 import cv2
2 face_cascade = cv2.CascadeClassifier('haarcascade_frontalface_default.xml')
3
4 img=cv2.imread("news.jpg")
5 gray_img=cv2.cvtColor(img,cv2.COLOR_BGR2GRAY)
6
7 faces=face_cascade.detectMultiScale(gray_img,
8 scaleFactor=1.1,
9 minNeighbors=5)
10
11 for x,y,w,h in faces:
12     img=cv2.rectangle(img,(x,y),(x+w,y+h),(0,255,0),3)
13
14 print(type(faces))
15 print(faces)
16
17 resized=cv2.resize(img,(int(img.shape[1]/3),int(img.shape[0]/3)))
18 cv2.imshow("Gray",resized)
19 cv2.waitKey(0)
20 cv2.destroyAllWindows()

```

UNTITLED (WORKSPACE) face detection haarcascade\_frontalface\_default.xml news.jpg photo.jpg script.py

PROBLEMS 1 OUTPUT TERMINAL DEBUG CONSOLE SQL CONSOLE Windows PowerShell Copyright (C) Microsoft Corporation. All rights reserved.

Try the new cross-platform PowerShell <https://aka.ms/pscore6>

PS C:\Users\hp\Desktop\face detection> python script.py

```
<class 'numpy.ndarray'>
[[ 46 220 111 111]]
```

OUTLINE TIMELINE

### 3)resizing the multiple picture into 100\*100 size

```
import cv2
import glob
```

```
images=glob.glob("*.jpg")
```

```
for image in images:
```

```
    img=cv2.imread(image,0)
    re=cv2.resize(img,(100,100))
    cv2.imshow("Hey",re)
    cv2.waitKey(500)
    cv2.destroyAllWindows()
    cv2.imwrite("resized_"+image,re)
```

The screenshot shows a Visual Studio Code interface with the following details:

- File Bar:** File, Edit, Selection, View, Go, Run, Terminal, Help.
- Editor:** The main editor window displays a Python script named `script.py`. The code reads multiple JPEG files from the current directory, resizes them to 100x100 pixels, and saves them with a prefix "resized\_".
- Explorer:** Shows the file tree. It contains two groups of files: `GROUP 1` and `GROUP 2`, both under `OPEN EDITORS`. Under `UNTITLED (WORKSPACE)`, there is a folder `multi images galaxy` containing files like `galaxy.jpg`, `kangaroos-rain-australia_71370_990x742.jpg`, etc., and a file `script.py`.
- Output:** The bottom right corner shows the output of a PowerShell terminal. It shows the command `python script.py` being run and its execution.
- Image Preview:** A small thumbnail preview of the resized image is visible in the center-right area of the editor.

#### 4)vedio capture:

```
import cv2,time  
video=cv2.VideoCapture(0)  
a=0  
while True:  
    a=a+1  
    check, frame=video.read()  
  
    print(check)  
    print(frame)  
    gray=cv2.cvtColor(frame,cv2.COLOR_BGR2GRAY)  
    time.sleep(3)  
    cv2.imshow("Capturing",gray)  
  
    key=cv2.waitKey(1)  
  
    if key==ord('q'):  
        break  
print(a)  
video.release()  
cv2.destroyAllWindows()
```

File Edit Selection View Go Run Terminal Help script.py – Untitled (Workspace) - Visual Studio

EXPLORER

OPEN EDITORS

script.py 2

UNTITLED (WORKSPACE)

vedio detection

script.py 2

script.py  x

vedio detection > script.py > ...

```
1 import cv2,time
2 video=cv2.VideoCapture(0)
3 a=0
4 while True:
5     a=a+1
6     check, frame=video.read()
7
8     print(check)
9     print(frame)
10    gray=cv2.cvtColor(frame,cv2.COLOR_BGR2GRAY)
11    time.sleep(3)
12    cv2.imshow("Capturing",gray)
13
14    key=cv2.waitKey(1)
15
16    if key==ord('q'):
17        break
18    print(a)
19    video.release()
20    cv2.destroyAllWindows()
```

PROBLEMS 2 OUTPUT TERMINAL DEBUG CONSOLE SQL CONSOLE

```
[[0 0 0]
 [0 0 0]
 [0 0 0]
 ...
 [0 0 0]
 [0 0 0]
 [0 0 0]]]
```

> OUTLINE

> TIMELINE

Python 3.8.3 32-bit ⑧ 2 ▲ 0 Connect

**COURSE:RPA (ROBOTIC PROCESS AUTOMATION)**

**DURATION:3HR**

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guvi.in/courses-video?course=rpa\_english#

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- FAQ
- Forum BETA

stepNo = 1

Then Else

Drop activity here

Typing Repeat

Type Into 'editable text'

File Edit Format View Help

"Repeat(k(enter))"

-07:05

Summary Activity Discussion

Table of content

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## Certificate of Completion ✓

Certificate verifies that Bindushri , Completed the Step into Robotic Process Automation successfully

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Bindushri

is here by awarded the certificate of achievement for the successful completion of

**Step into Robotic Process Automation** during GUVI's RPA SKILL-A-THON 2020

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S.P.Baliamurugan  
Co-founder, CEO

In association with

UiPath Academic Alliance

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1-06-2020 ~~RPA~~ RPA

→ RPA → Robotic Process Automation.

Introduction of RPA

Introduction of uipath → Daniel Dines. 53 offices  
EU 20 countries, receives \$7B.

Basic structure → 3 main component.

① studio. ② orchestrator. ③ robot.

Benefits of uipath Automation

- \* Robot for every process. \* accurate.
- \* High productivity. \* Resource optimization
- \* Reliability.
- \* Consistent.

steps:

→ PoC → (Start bank project)

Library → (Create reusable components)  
transactional process.

Agent process implementation.

Robotic Enterprise.

there are 3 channel.

① Activity channel

② Design channel

③ Preferred channel

→ Ribbon - contains Start, Design, execute.

→ Search message box in Activity channel

click on to that

message panel will be displayed in the Design channel  
panel type "Hello World" and submit  
will display it on screen

↓  
that creates 1st robots.

Scraping: conditions and loops inxpath

capturing

→ Screen Scraping: It is used to read data  
from screen. It is capable of scraping visible  
and non-visible data on screen.

→ Data Scraping

is the process of extracting restructured data  
from a browser, application, or document  
to a database, CSV file etc.

Recorder in xpath studio

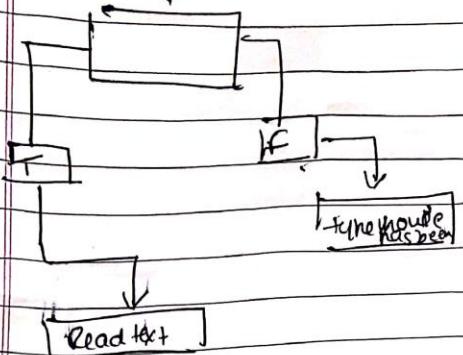
single window multi window Internet explorer chrome Firefox  
→ Browser, desktop, web, image, relative xpath

Similar components: Save & Exit, Record,  
and manual recording actions

Flow chart

↓  
Step 1 → open (<https://www>)

↓  
Type URL 'INPUT'

loop

loop is a programming  
structure that repeats  
of instructions  
until a specific  
condition is met

3) types



while, do while,  
for each.

\* In steps.

\* Repeat writer cocycles creates the loop by using path

→ If activity contains a statement with a condition attached. & two sets of instructions as outcomes

Intermediate Module

② Data persistance :- property of data  
to survive in same form after the process  
or application which has created it has ended.

→ Stored in RAM, Data saved on hard drive.

Read from an excel file & write to an excel file

② Selectors :- fundamental path in UI path.

4 types.

# Certificate:



Bindushri

is here by awarded the certificate of achievement for  
the successful completion of

**Step into Robotic Process Automation**

during GUVI's RPA **SKILL-A-THON** 2020

  
S.P.Balamurugan

Co-founder, CEO

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