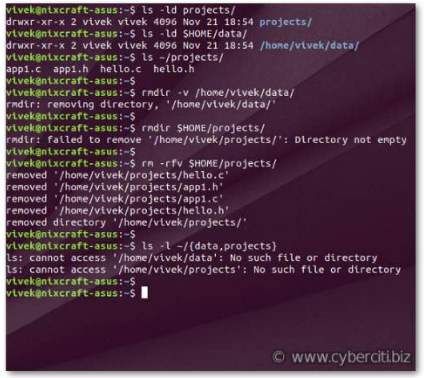
Python libraries

From terminal to gaming



```
vivek@nixcraft-asus:~$ ls -ld projects/
drwxr-xr-x 2 vivek vivek 4096 Nov 21 18:54 projects/
vivek@nixcraft-asus:~$ ls -ld $HOME/data/
drwxr-xr-x 2 vivek vivek 4096 Nov 21 18:54 /home/vivek/data/
vivek@nixcraft-asus:~$ ls ~/projects/
app1.c  app1.h  hello.c  hello.h
vivek@nixcraft-asus:~$
vivek@nixcraft-asus:~$ rmdir -v /home/vivek/data/
rmdir: removing directory, '/home/vivek/data/'
vivek@nixcraft-asus:~$
vivek@nixcraft-asus:~$ rmdir $HOME/projects/
rmdir: failed to remove '/home/vivek/projects/': Directory not empty
vivek@nixcraft-asus:~$
vivek@nixcraft-asus:~$ rm -rfv $HOME/projects/
removed '/home/vivek/projects/hello.c'
removed '/home/vivek/projects/app1.h'
removed '/home/vivek/projects/app1.c'
removed '/home/vivek/projects/hello.h'
removed directory '/home/vivek/projects/'
vivek@nixcraft-asus:~$
vivek@nixcraft-asus:~$ ls -l ~/{data,projects}
ls: cannot access '/home/vivek/data': No such file or directory
ls: cannot access '/home/vivek/projects': No such file or directory
vivek@nixcraft-asus:~$
vivek@nixcraft-asus:~$ █
```

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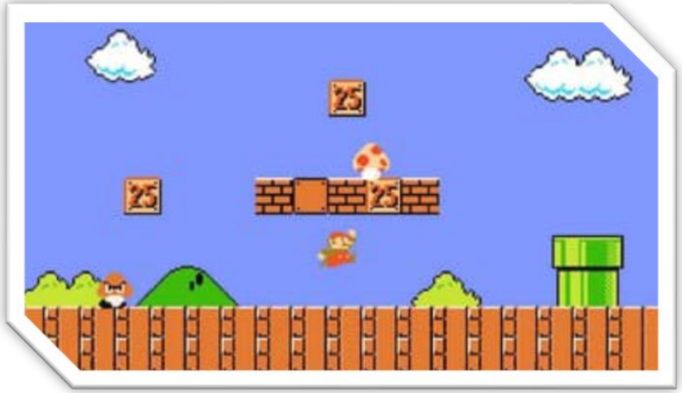
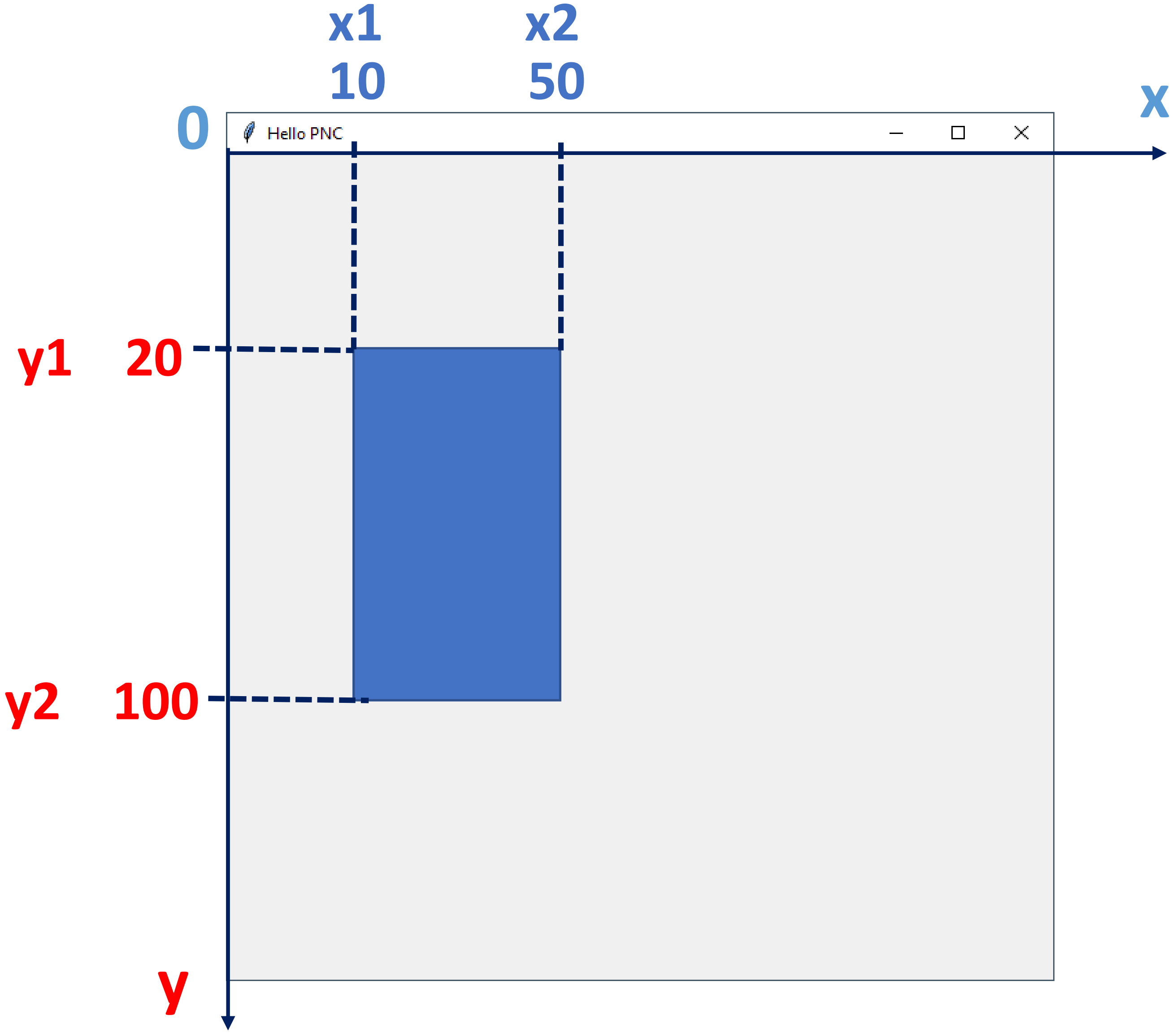


In the previous lesson

```
create_rectangle(x1, y1, x2, y2, optional parameters…)
```



```
create_rectangle(10, 20, 50, 100, fill="#0000FF")
```

Events

- **Events** are used to **track user interaction** with the windows

- Examples of events :
  - User click on a shape
  - User type on the keyboard

- With TK you can **trigger a function** every time an event happens.

Events

Trigger function should **always** have a parameter « event »

```
def myEventTrigger(event):
    print("User has clicked at position : ", event.x, event.y)

canvas = tk.Canvas(frame)
canvas.create_oval(50, 50, 300, 300, fill="red", tags="PNCTarget")
canvas.tag_bind("PNCTarget","<Button-1>",myEventTrigger)
```

Use « **tag_bind** » to link a function with an event

<Button-1> = left button of mouse

<Button-3> = right button of mouse

The function to call everytime the event will happen

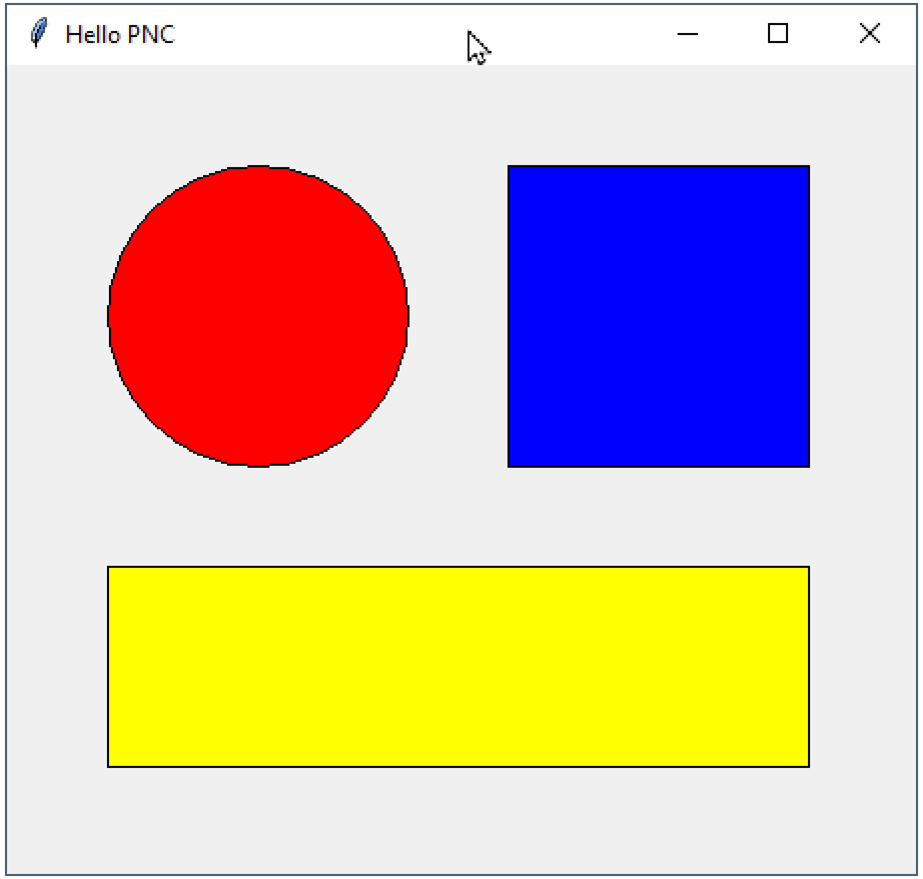
Set a tag to the shape.

Similar to ID in HTML

Practice

20 min

Activity 1



- Create a window with 3 shapes

- When use clicks on a shape print according to the shape clicked :
  - User clicks on circle
  - User clicks on square
  - User clicks on rectangle

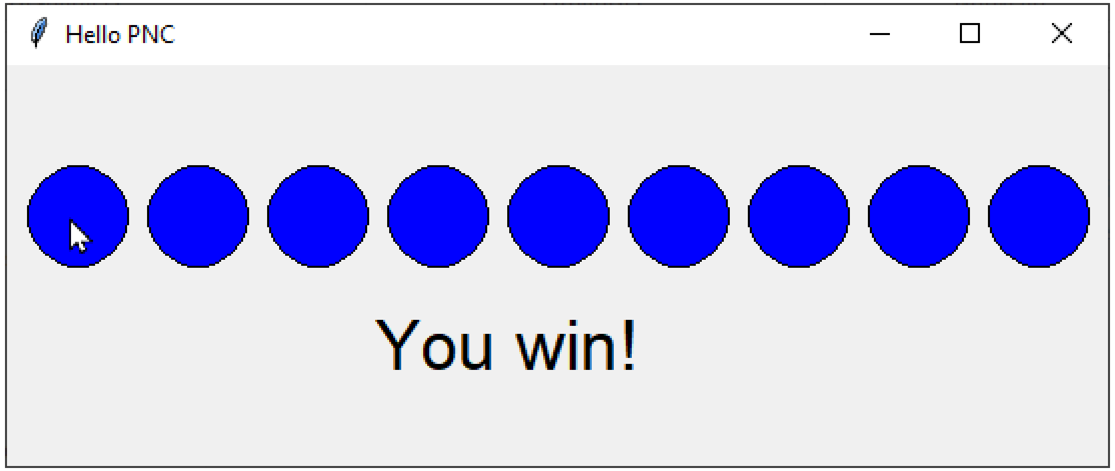
Practice

20 min

Activity 2

Secret circle game

- Use « the line » code from previous exercise.
- Change it : all circles should have the same color but one should be the « secret » circle
- When user click on the secret circle it displays « you win »



You win!

Reminder :

```
canvas.create_text(x,y,text="You win!",font=("Purisa", 26))
```

Practice

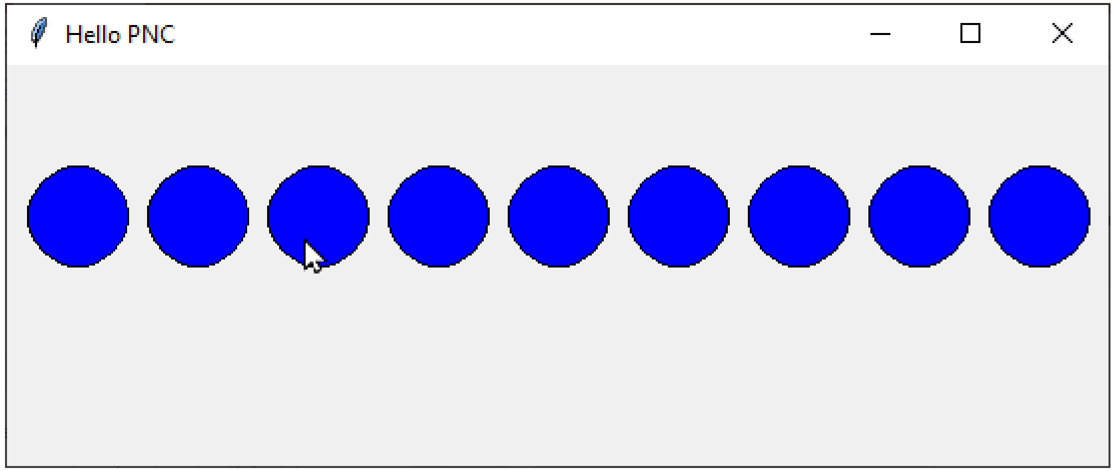
20 min

Activity 3

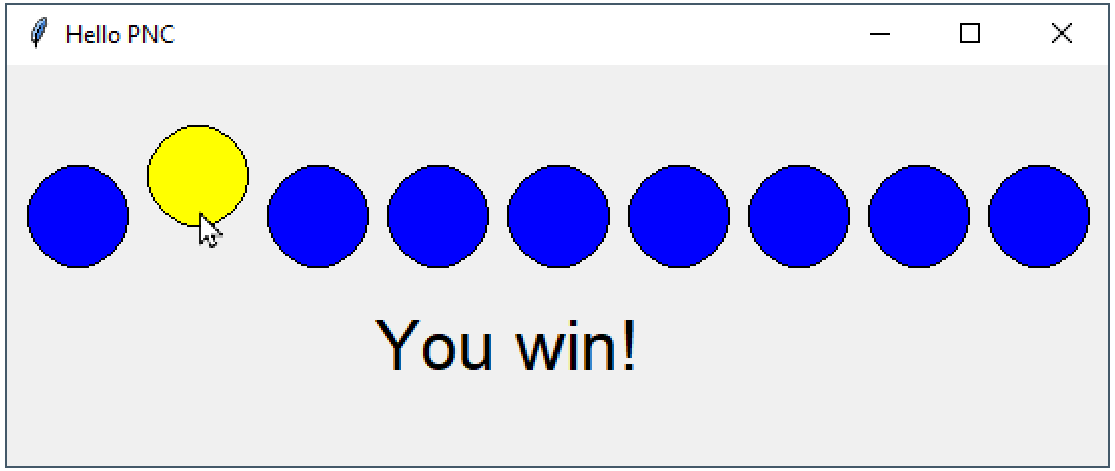
Game : Where is the secret ?

Upgrade your « Secret circle game » ⍰   Change the color of the secret circle when user click on it.

BEFORE CLICK ON THE SECRET CIRCLE



AFTER CLICK



You win!

Let s SUMP UP

- **Events** = call a **function** when user click or type text
- An event can be **bind** to a shape with a **tag**
- An event can also be bind to « root » (root is everywhere)

```
def myEventTrigger(event):
    print("User have clicked at position : ", event.x, event.y)
    randomColor = random.choice(colors)
    canvas.itemconfig(oval, fill=randomColor)
    canvas.move(oval, 10, 10)

canvas = tk.Canvas(frame)
colors = ["red", "orange", "yellow", "green", "blue", "indigo", "violet"]
oval = canvas.create_oval(50, 50, 300, 300, fill="red", tags="PNCTarget")
canvas.tag_bind("PNCTarget","<Button-1>",myEventTrigger)
root.bind("<Button-1>",myEventTrigger)
```

Change a shape position and color

Call function when click on shape

Call function when click anywhere

Practice

20 min

Homework research

- **Test this code.** Try to understand the new concepts :
  - Can you guess what is the purpose of « random.choice » ?
  - Can you guess what is the purpose of « canvas.itemconfig » ?
  - Can you guess what is the purpose of « canvas.move » ?
  - Why did I use variable on line « `oval = canvas.create_oval…` » ?

```
def myEventTrigger(event):
    print("User have clicked at position : ", event.x, event.y)
    randomColor = random.choice(colors)
    canvas.itemconfig(oval, fill=randomColor)
    canvas.move(oval, 10, 10)

canvas = tk.Canvas(frame)
colors = ["red", "orange", "yellow", "green", "blue", "indigo", "violet"]
oval = canvas.create_oval(50, 50, 300, 300, fill="red", tags="PNCTarget")
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