

1.0 Python

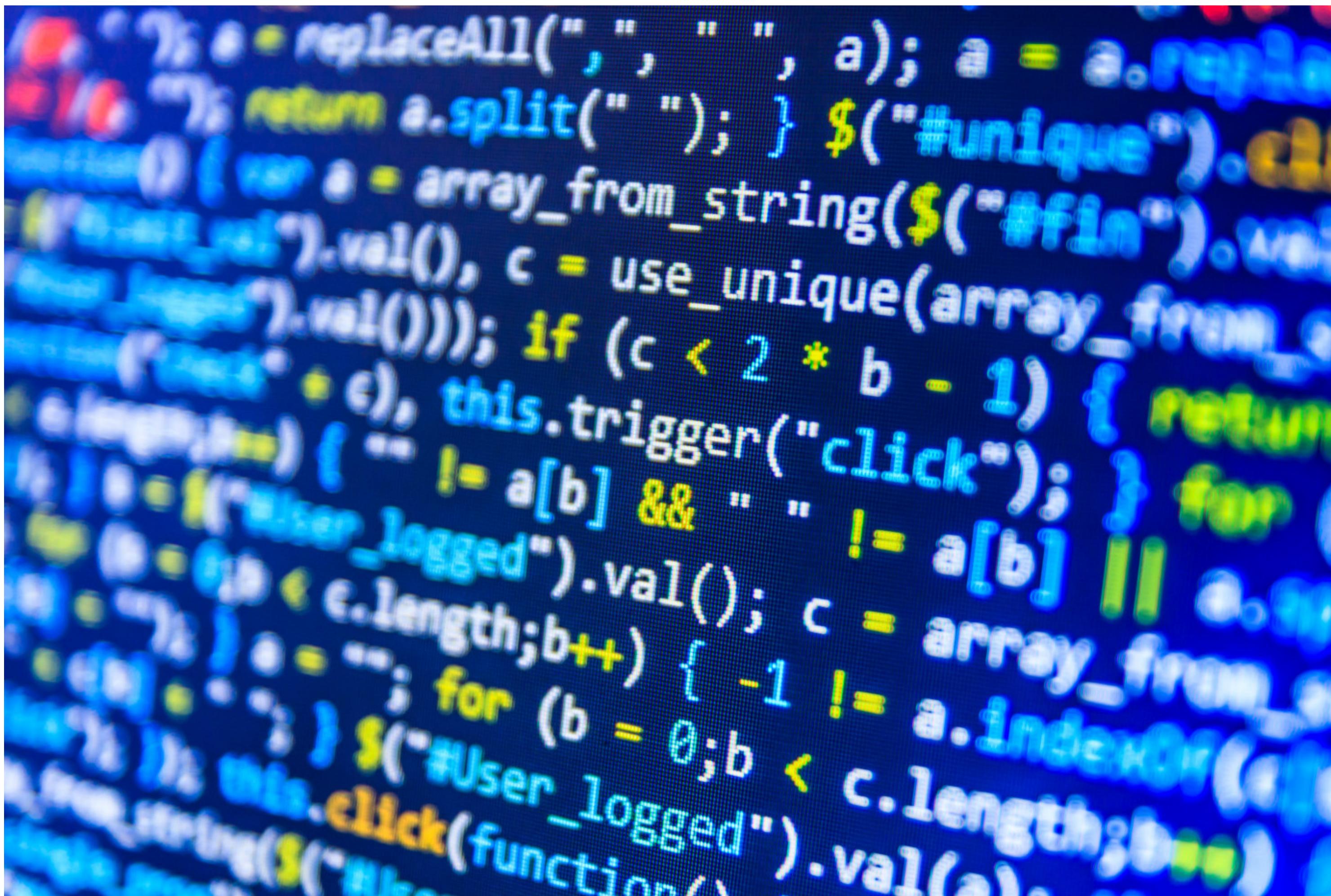
Introduction to Coding

Lee Sing Jie

Outcome

- You will learn basic coding paradigm, using Python.
- You will learn conditional branching, loops, inputs and outputs
- You will eventually develop a BMI calculator

What is coding



What is coding

- The process of writing code
 - Writing program for computers
 - Ability to execute complex problems quickly
 - Breaking down complex problems into sub problems

What is coding

- Humans talk to each other in languages
- The instructions we use to talk to computers is called **code**

What is coding

Different Languages

Frontend / Websites

- Javascript
- CSS
- HTML
- ...

Backend / Servers

- Javascript
- Python
- Ruby
- C/C++
- Ruby on Rails
- ...

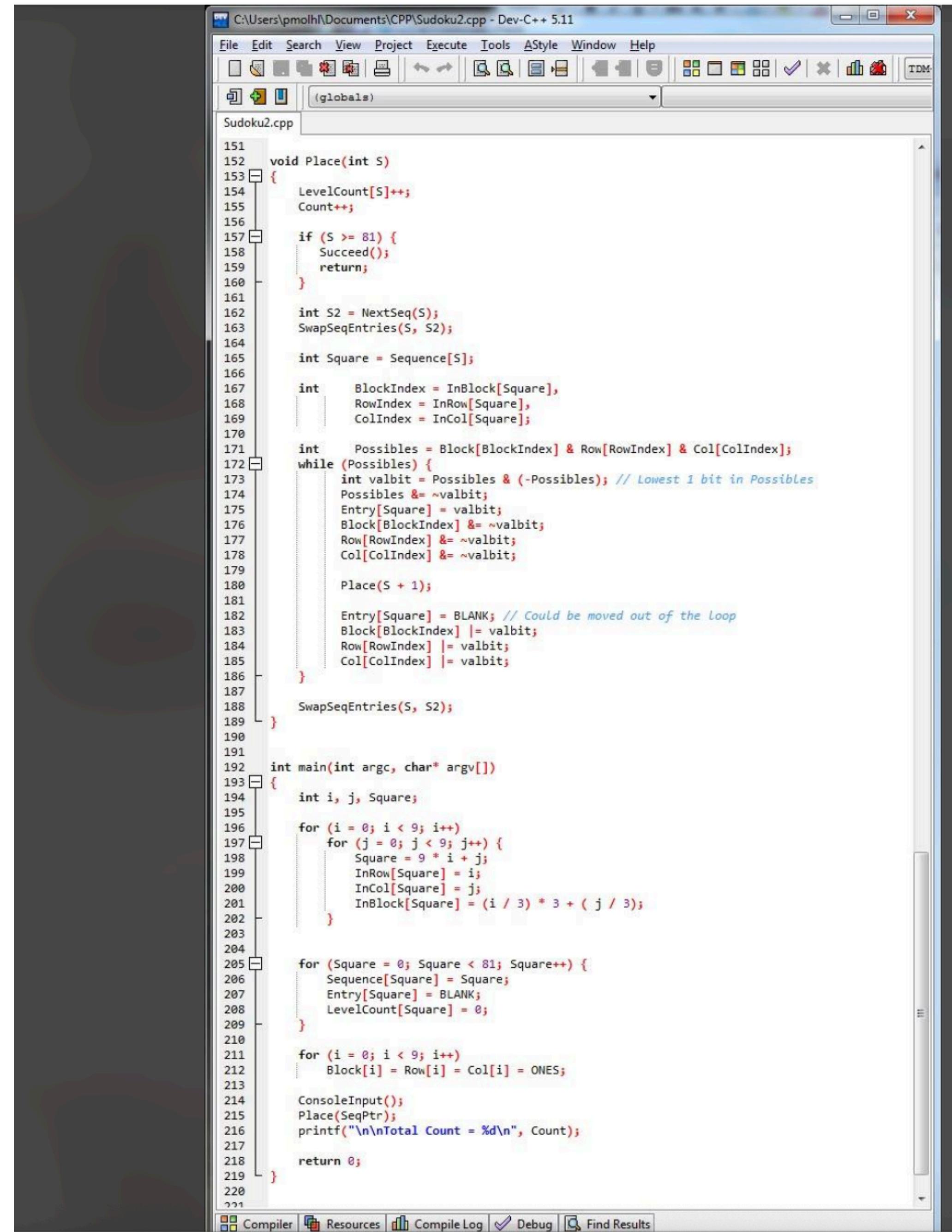
Hardwares

- C/C++
- ...

Smart Nation

KEY MILESTONES FOR STRATEGIC NATIONAL PROJECTS

	2019	2020	2021 and Beyond
National Digital Identity (NDI)	<ul style="list-style-type: none"> More features for SingPass Mobile (SPM) Pilots to simplify corporate submissions to Govt with Authorise 	<ul style="list-style-type: none"> MyInfo for 145 Govt and 155 private sector services In-person identity verification with Verify 	<ul style="list-style-type: none"> 1 million SPM users (1H 2020) Digital signing trials (2H 2020) Widespread adoption of NDI (2022) 3 million SPM users
E-Payments	<ul style="list-style-type: none"> Bank cards for public transport 75,000 SGQR labels distributed 	<ul style="list-style-type: none"> 54,000 unified point-of-sale terminals deployed 	<ul style="list-style-type: none"> Payment Services Act commences (1H 2020) Non-bank FAST access (2H 2020) E-payment option for all payments to and from Govt (2023) No more cheques (2025 and beyond)
Moments of Life (MOL)	<ul style="list-style-type: none"> Services for families with young children expanded Active Ageing features for seniors introduced 	<ul style="list-style-type: none"> Launch of Parents Gateway Electronic birth registrations for private hospitals 	<ul style="list-style-type: none"> Brand refresh with new look and additional services (2H 2020) More support for working adults e.g. seeking employment (2H 2020) Services for Singaporeans travelling and living overseas (2H 2020) More personalised services to benefit more Singaporeans
GoBusiness	<ul style="list-style-type: none"> Streamline processes to help F&B businesses apply for the licences they need 	<ul style="list-style-type: none"> GoBusiness to expand to other industry sectors e.g. retail sector More services for businesses on GoBusiness platform e.g. Advice on suitable Govt grants, info and tools on starting a business 	<ul style="list-style-type: none"> Further streamlining and improving Govt services for businesses
Core Operations, Development Environment, and eXchange (CODEX)	<ul style="list-style-type: none"> Migration of Govt systems to cloud Central repositories to facilitate inter-agency data sharing to improve services 	<ul style="list-style-type: none"> Trial of developer-friendly tools and APIs Cross-agency sharing of core data sets within 7 working days (2H 2020) 	<ul style="list-style-type: none"> Majority of eligible Govt systems on commercial cloud (2023)
Smart Nation Sensor Platform (SNSP)	<ul style="list-style-type: none"> Lamppost-as-a-Platform trial (LaaP) 	<ul style="list-style-type: none"> Central tools to facilitate sensor deployment 	<ul style="list-style-type: none"> Progressive deployment of Personal Alert Buttons benefitting 10,100 elderly households in 53 HDB rental blocks Deployment of LaaP in Punggol
Smart and Sustainable Punggol	<ul style="list-style-type: none"> Singapore Institute of Technology (SIT) and Punggol Digital District (PDD) groundbreaking 	<ul style="list-style-type: none"> Completion of smart HDB homes for better monitoring of energy consumption Progressive deployment of smart estate services in Punggol Northshore 	<ul style="list-style-type: none"> City-level sensor data available for industry and public (2022) Computer Vision Drowning Detection System (CVDDS) at 27 swimming complexes Smart Utility Meters roll-out (2024)
Smart Urban Mobility	<ul style="list-style-type: none"> Trial of hands-free ticketing technology Trials of autonomous buses and shuttles 	<ul style="list-style-type: none"> Expansion of hands-free ticketing technology trial 	<ul style="list-style-type: none"> Punggol Regional Sport Centre: Virtual coaching, augmented reality gamification, seamless facilities booking (2023) Open Digital Platform to integrate smart technologies and promote data-sharing (2023) Smart grid solutions to reduce carbon emissions (2023) Smart Facilities Management for predictive maintenance (2023) Pilot deployment of Autonomous buses and shuttles Progressive deployment of next-generation smart traffic light control system



The screenshot shows the Dev-C++ IDE interface with the file "Sudoku2.cpp" open. The code implements a backtracking algorithm to solve a Sudoku puzzle. It uses arrays to track the state of rows, columns, and 3x3 blocks. The main function initializes the board and calls the "Place" function to find a solution. The "Place" function attempts to place a digit in each square, updating the board and backtracking if it leads to a contradiction.

```
151 152 void Place(int S)
153 {
154     LevelCount[S]++;
155     Count++;
156
157     if (S >= 81) {
158         Succeed();
159         return;
160     }
161
162     int S2 = NextSeq(S);
163     SwapSeqEntries(S, S2);
164
165     int Square = Sequence[S];
166
167     int BlockIndex = InBlock[Square],
168        RowIndex = InRow[Square],
169         ColIndex = InCol[Square];
170
171     int Possibles = Block[BlockIndex] & Row[RowIndex] & Col[ColIndex];
172     while (Possibles) {
173         int valbit = Possibles & (-Possibles); // Lowest 1 bit in Possibles
174         Possibles &= ~valbit;
175         Entry[Square] = valbit;
176         Block[BlockIndex] &= ~valbit;
177         Row[RowIndex] &= ~valbit;
178         Col[ColIndex] &= ~valbit;
179
180         Place(S + 1);
181
182         Entry[Square] = BLANK; // Could be moved out of the loop
183         Block[BlockIndex] |= valbit;
184         Row[RowIndex] |= valbit;
185         Col[ColIndex] |= valbit;
186     }
187
188     SwapSeqEntries(S, S2);
189 }
190
191 int main(int argc, char* argv[])
192 {
193     int i, j, Square;
194
195     for (i = 0; i < 9; i++)
196     {
197         for (j = 0; j < 9; j++) {
198             Square = 9 * i + j;
199             InRow[Square] = i;
200             InCol[Square] = j;
201             InBlock[Square] = (i / 3) * 3 + (j / 3);
202         }
203     }
204
205     for (Square = 0; Square < 81; Square++) {
206         Sequence[Square] = Square;
207         Entry[Square] = BLANK;
208         LevelCount[Square] = 0;
209     }
210
211     for (i = 0; i < 9; i++)
212     {
213         Block[i] = Row[i] = Col[i] = ONES;
214     }
215
216     ConsoleInput();
217     Place(SeqPtr);
218     printf("\n\nTotal Count = %d\n", Count);
219
220     return 0;
221 }
```



Lee Hsien Loong

★ Favourites · 4 May 2015 ·

I told the Founders Forum two weeks ago that the last computer program I wrote was a Sudoku solver, written in C++ several years ago (<http://bit.ly/1DMK5Zk>). Someone asked me for it. Here is the source code, the exe file, and a sample printout - <http://bit.ly/1zAXbua>

The program is pretty basic: it runs at the command prompt, in a DOS window. Type in the data line by line (e.g. 1-3-8---6), then the solver will print out the solution (or all the solutions if there are several... [See more](#)



51K 2.6K comments 17K shares



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Most relevant



Author

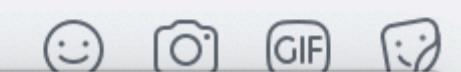
Lee Hsien Loong 

Answer: As several of you noted, $(x \& -x)$ returns the least significant '1' bit of x , i.e. the highest power of two that divides x . This assumes two's complement notation for negative numbers, as some of you also pointed out. e.g. if $x=12$ (binary 1100)... [See more](#)

1 7K



Write a comment...



Python

- Programming Language, e.g. C++, C, Swift, Java, JavaScript
- Python is simple to use

IDE Walkthrough

Integrated Development Environment

IDE

- Why IDE is needed?
 - Format Code
 - Auto Complete
 - Compilation
 - Execution
- We are using PyCharm



IDE Walkthrough

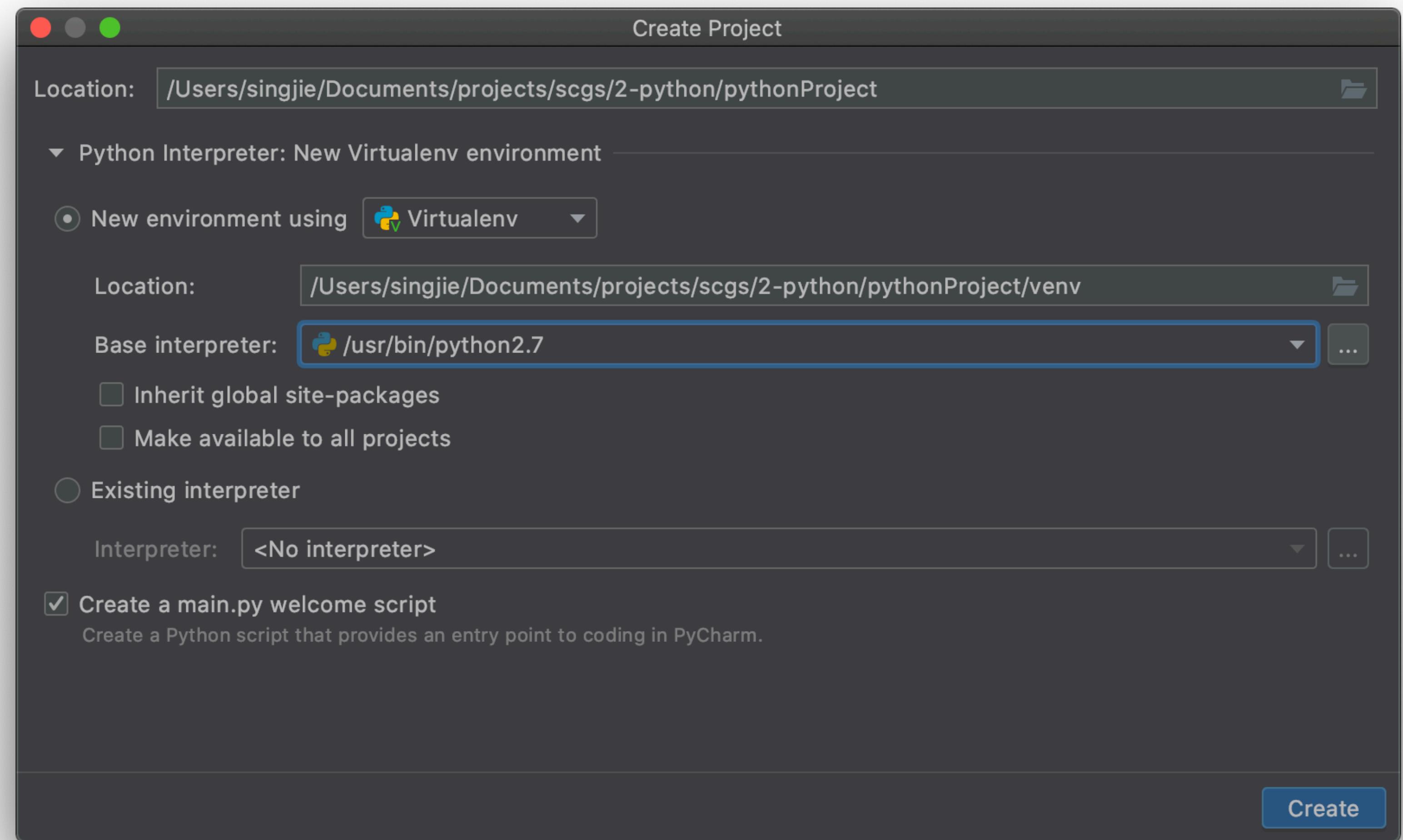
Setup

- Laptop
 - PC or Mac
- Install PYCharm (Community Version)
 - Link: <https://www.jetbrains.com/pycharm/download/>

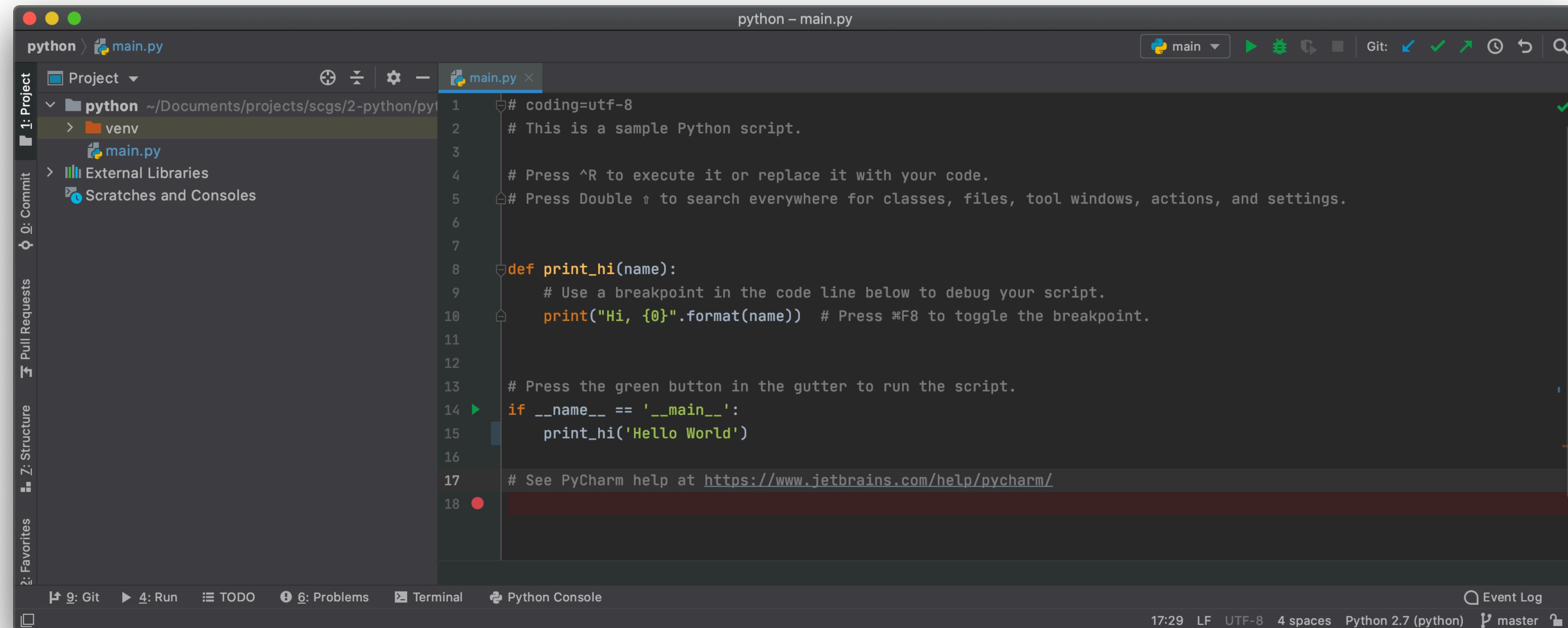
IDE Walkthrough

First Project

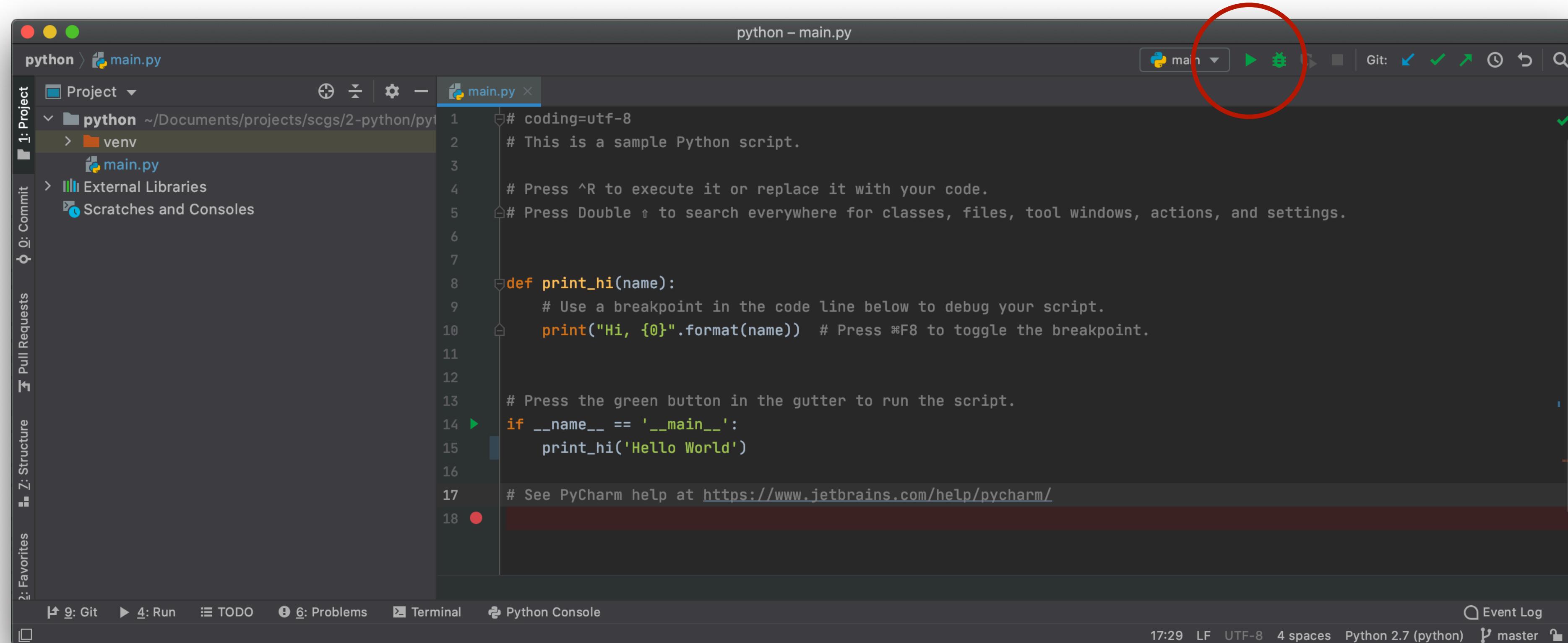
- File > New Project
- Create Project
- **Project Created**



IDE Walkthrough



IDE Walkthrough



IDE Walkthrough

The screenshot shows the PyCharm IDE interface with a dark theme. The main window displays a Python script named `main.py` in the editor. The code is as follows:

```
# coding=utf-8
# This is a sample Python script.

# Press ^R to execute it or replace it with your code.

# Press Double ↑ to search everywhere for classes, files, tool windows, actions, and settings.

def print_hi(name):
    # Use a breakpoint in the code line below to debug your script.
    print("Hi, {0}".format(name)) # Press %F8 to toggle the breakpoint.

# Press the green button in the gutter to run the script.
if __name__ == '__main__':
    print_hi('Hello World')

# See PyCharm help at https://www.jetbrains.com/help/pycharm/
```

The Run tool window at the bottom shows the output of the script execution:

```
/Users/singjie/Documents/projects/scgs/2-python/python/venv/bin/python /Users/singjie/Documents/projects/scgs/2-python/python/main.py
Hi, Hello World
Process finished with exit code 0
```

A red circle highlights the output line `Hi, Hello World` in the Run tool window.

hello world

```
print("Hello World")
```

hello world

```
print("Hello World - I am from SCGS")
```

Using Variables & Indentation

name = "Grace"

age = 14

birthday = "29 May 2006"

Using Variables & Indentation

`name = "Grace"`

`age = 14`

`birthday = "29 May 2006"`

Variable	Value
<code>name</code>	"Grace"
<code>age</code>	14
<code>birthday</code>	"29 May 2006"

Using Variables & Indentation

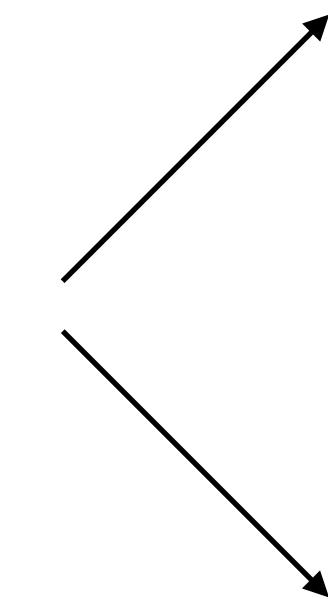
Boolean

“Is the door locked?”

Yes

.....

True



No

.....

False

Using Variables & Indentation

Boolean

```
is_door_locked = False
```

```
is_door_locked = True
```

Using Variables & Indentation

Boolean

```
is_world_round = False
if is_world_round:
    print("Hello World")
else:
    print("Flat World")
```

Using Variables & Indentation

Boolean

```
is_world_round = False
if is_world_round:
    print("Hello World")
else:
    print("Flat World")
```

Using input / output output

```
print("What is your name?")
```

Using input / output

input

```
value = input("What's your name? ")  
print(value)
```

Lab

Basics

Lab

Basics

What is your name?: Lee Sing Jie

Lab

Include Age & Gender

Lab

Include Age & Gender

What is your name?: Lee Sing Jie

What is your age?: 14

What is your gender?: F

Simple Math Variables

```
i = 25 + 25
```

```
print('The value of i is', i)
```

Simple Math Variables

Operation	Math Symbol	Python Operator
Addition	+	+
Subtraction	-	-
Multiplication	x	*
Division	÷	/

Simple Math Variables

answer = 1

answer2 = answer + answer

answer = answer2 + answer2

Simple Math Variables

```
answer = 1
```

```
answer2 = answer + answer
```

```
answer_final = answer2 + answer2
```

```
answer_FINAL = answer_final + answer2
```

```
answer = answer_FINAL + 1
```

Lab

Year of Birth

Lab

Include Age & Gender

What is your name?: Lee Sing Jie

What is your age?: 14

What is your gender?: F

You are born in Year 2006

Simple Math Operators

Operator	Example	Result Value
Equal	<code>1 == 2</code>	False
Not Equal	<code>1 != 2</code>	True
Less Than	<code>1 < 2</code>	True
Greater Than	<code>1 > 2</code>	False
Less Than or Equal	<code>1 <= 2</code>	True
Greater Than or Equal	<code>1 >= 2</code>	False

Simple Math Operators (= vs ==)

= : Assignment - Assign a value to a variable

this_value = 4

== : Comparison - Comparing two values

this_value == 4

Simple Math Operators

```
this_value = 4  
that_value = 5
```

```
this_value == that_value // True  
that_value == 3 // False  
that_value == 5 // True
```

Simple Math

Int vs String

```
value_1 = "Singapore Chinese Girls School"  
value_2 = 123  
value_3 = "123"
```

Simple Math

Int vs String

```
value_1 = "Singapore Chinese Girls School"    string  
value_2 = 123                                  int  
value_3 = "123"                                string
```

Simple Math

Int vs String

```
value_1 = "Singapore Chinese Girls School"  
value_2 = 123  
value_3 = "123"  
  
print(value_1 + 1)
```

Simple Math

Int vs String

```
value_1 = "Singapore Chinese Girls School"
value_2 = 123
value_3 = "123"

print(value_1 + 1) // TypeError: can only concatenate str (not "int") to str
```

Simple Math

Int vs String

```
value_1 = "Singapore Chinese Girls School"  
value_2 = 123  
value_3 = "123"  
  
print(value_2 + 1) // 124
```

Simple Math

Int vs String

```
value_1 = input("Please enter value 1: ")  
print('The value is', value_1)
```

Simple Math

Int vs String

```
value_1 = input("Please enter value 1: ")  
value_2 = input("Please enter value 2: ")  
  
c = value_1 + value_2  
  
print('The value is', c)
```

Simple Math

Int vs String

```
value_1 = input("Please enter value 1: ")  
value_2 = input("Please enter value 2: ")
```

```
c = value_1 + value_2
```

```
print('The value is', c)
```

Please enter value 1: 22

Please enter value 2: 11

The value is 2211

Simple Math

Int vs String

```
value_1 = input("Please enter value 1: ")  
value_2 = input("Please enter value 2: ")  
  
c = int(value_1) + int(value_2)  
  
print('The value is', c)
```

Simple Math

Int vs String

```
value_1 = input("Please enter value 1: ")  
value_2 = input("Please enter value 2: ")
```

```
c = int(value_1) + int(value_2)
```

```
print('The value is', c)
```

Please enter value 1: 22

Please enter value 2: 11

The value is 33

Simple Math

Int vs String

```
value_1 = input("Please enter value 1: ")  
value_2 = input("Please enter value 2: ")
```

```
c = int(value_1) + int(value_2)
```

```
print('The value is', c)
```

Please enter value 1: aa

Please enter value 2: bb

ValueError: invalid literal for int() with base 10: 'aa'

Lab

Addition / Subtraction / Multiplication / Division

Lab

Addition / Subtraction / Multiplication / Division

Enter first number: 5

Enter second number: 10

Enter the operation (+ or - or * or /): +

The result is: 15

Decision Making

Do you want to turn on the lights?

Turn it on if it's too dark

Decision Making

Do you want to turn on the lights?

If room is dark:

Turn on lights

Else

Don't turn on lights

Decision Making

Should I eat lunch now?

If I am hungry:

Eat something

Else

Not eat

Decision Making

Should I eat lunch now?

If I am hungry:

Eat something

Else if I am a little hungry:

Eat some snacks

Else:

Not eat anything

Decision Making

If Else Statements

```
is_hungry = True  
if is_hungry:  
    print("Eat something")  
else:  
    print("Not eat anything")
```

Output:
Eat something

Decision Making

If Else Statements

```
is_hungry = True  
if is_hungry:  
    print("Eat something")  
else:  
    print("Not eat anything")  
print("Finish making decision ")
```

Output:
Eat something
Finish making decision

Decision Making

If Else Statements

```
is_hungry = True  
if is_hungry:  
    print("Eat burger")  
    print("Eat rice")  
else:  
    print("Not eat burger")  
    print("Not eat rice")  
print("Finish making decision ")
```

Output:

Eat burger

Eat rice

Finish making decision

Decision Making

If Else Statements

```
is_hungry = False  
if is_hungry:  
    print("Eat burger")  
    print("Eat rice")  
else:  
    print("Not eat burger")  
    print("Not eat rice")  
print("Finish making decision ")
```

Output:

Not eat burger

Not eat rice

Finish making decision

Decision Making

If Else Statements

```
is_hungry = False  
if is_hungry:  
    print("Eat burger")  
    print("Eat rice")  
else:  
    print("Not eat burger")  
    print("Not eat rice")  
print("Finish making decision ")
```

Belongs to Belongs to

Output:

Not eat burger

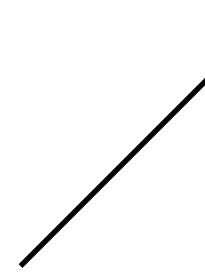
Not eat rice

Finish making decision

Decision Making

If Else Statements

```
is_hungry = False
if is_hungry:    Colon
    print("Eat burger")
    print("Eat rice")
else:
    print("Not eat burger")
    print("Not eat rice")
    print("Finish making decision ")
```

Indentation 

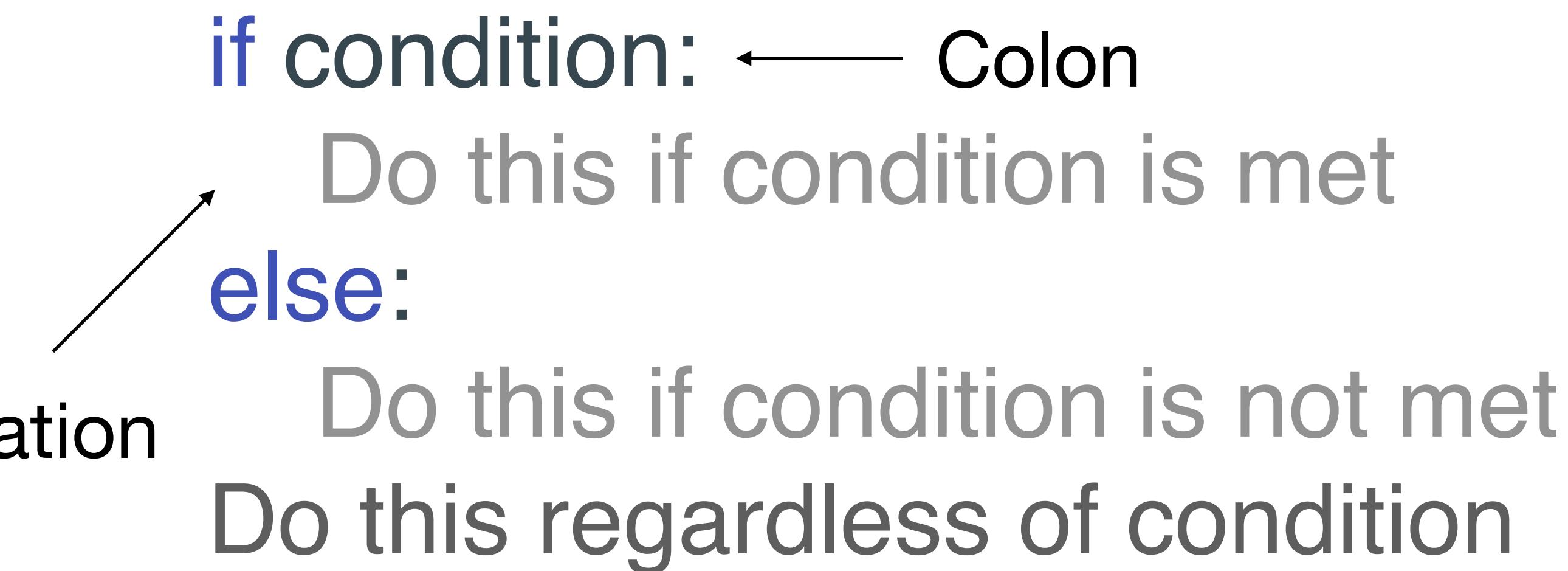
Decision Making

If Else Statements

if condition: —— Colon
Do this if condition is met

else:
Do this if condition is not met
Do this regardless of condition

Indentation



Lab

Are you hungry?

Lab

Are you hungry?

Are you hungry? Y/N **Y**

Eat something

Are you hungry? Y/N **N**

Not eat anything

Lab

Pioneer Generation Calculator

Lab

Pioneer Generation Calculator

1950 - 1959: Merdeka Generation
19xx - 1949: Pioneer Generation

Lab

Pioneer Generation Calculator

What is your name? **Lee Sing Jie**

What is your age? **14**

You are born in the year 2006.

You are not from Pioneer Generation.

You are not from Merdeka Generation.

Lab

Pioneer Generation Calculator

What is your name? Lee Sing Jie

What is your age? 90

You are born in the year 1930.

You are from Pioneer Generation.

You are not from Merdeka Generation.

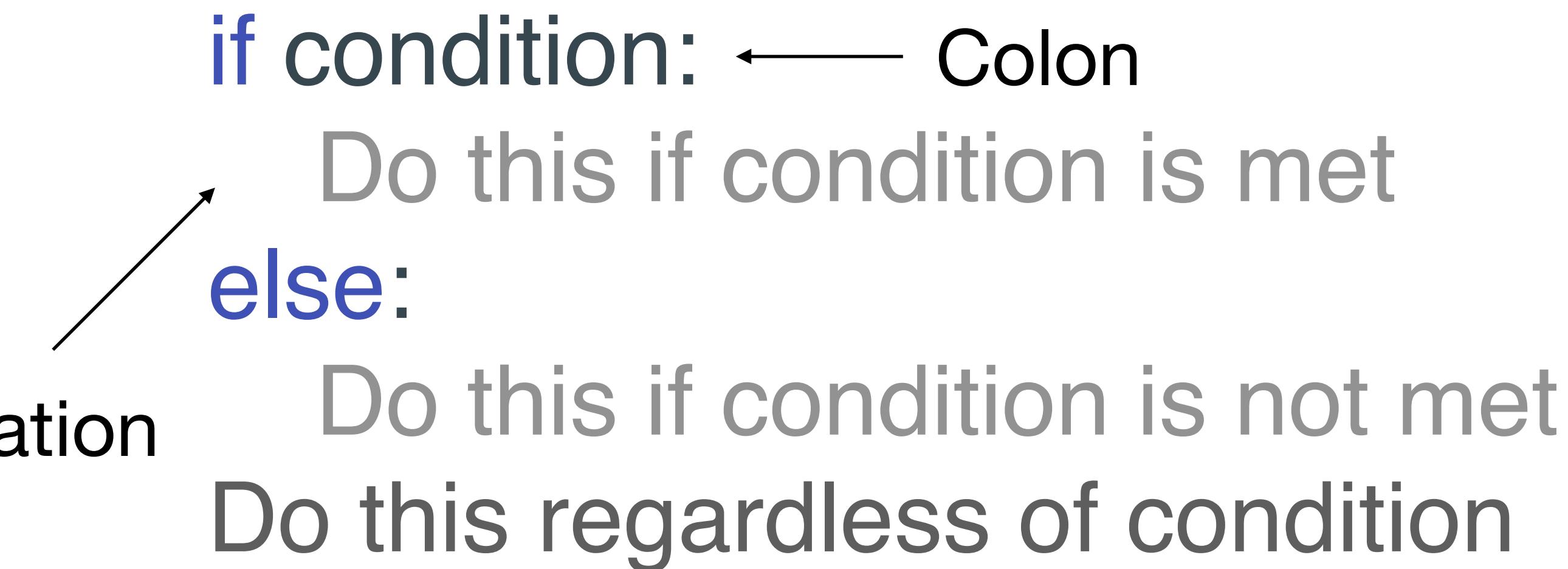
Decision Making

If Else Statements

if condition: —— Colon
Do this if condition is met

else:
Do this if condition is not met
Do this regardless of condition

Indentation



Decision Making

If Else Statements

if condition:

Do this if condition is met

else:

Do this if condition is not met

Decision Making

If Else Statements

`if year == 1950:`

Do this if condition is met

`else:`

Do this if condition is not met

Decision Making

If Else Statements (AND)

```
if year == 1950 and month == 10 and day == 1:
```

Do this if condition is met

```
else:
```

Do this if condition is not met

Decision Making

If Else Statements (OR)

```
if year == 1950 or year == 1951:
```

Do this if condition is met

```
else:
```

Do this if condition is not met

Decision Making

If Else Statements

```
if year >= 1950:  
    if year <= 1959:  
        print("You belong to the Merdeka Generation")  
    else:  
        print("You do not belong to the Merdeka Generation")  
else:  
    print("You do not belong to the Merdeka Generation")
```

Decision Making

If Else Statements

```
if year >= 1950 and year <= 1959:  
    print("You belong to the Merdeka Generation")  
else:  
    print("You do not belong to the Merdeka Generation")
```

Break

15 minutes

Lab

Building BMI Calculator

Lab

Building BMI Calculator

Body Mass Index (BMI) is a person's **weight** in kilograms divided by the square of height in meters. A high **BMI** can be an **indicator** of high **body** fatness.

BMI can be used to screen for **weight** categories that may lead to health problems but it is not diagnostic of the **body** fatness or health of an individual.

Lab

Building BMI Calculator

$$\text{BMI} = \frac{m}{h^2}$$

BMI = body mass index

m = mass (in kilograms)

h = height (in meters)

Lab

Building BMI Calculator

BMI in kg/m ²	Weight category*
More than or equal to 30	Obese
25–29.9	Overweight
18.5–24.9	Healthy weight
Less than 18.5	Underweight

*According to the World Health Organization
for adults aged 18–69

Lab

Building BMI Calculator

Weight (kg): 82

Height (cm): 184

Your BMI is 24.2, you are healthy, within the recommended BMI of 18.5-24.9.

Lab

Advanced BMI Calculator

Lab

Advanced BMI Calculator

16 March 2005

REVISION OF BODY MASS INDEX (BMI) CUT-OFFS IN SINGAPORE

1 The BMI cut-off levels for Singapore will be revised based on the findings from local studies and the recommendations from the WHO Expert Consultation in Singapore.

Revised BMI Cut-Off Points in Singapore

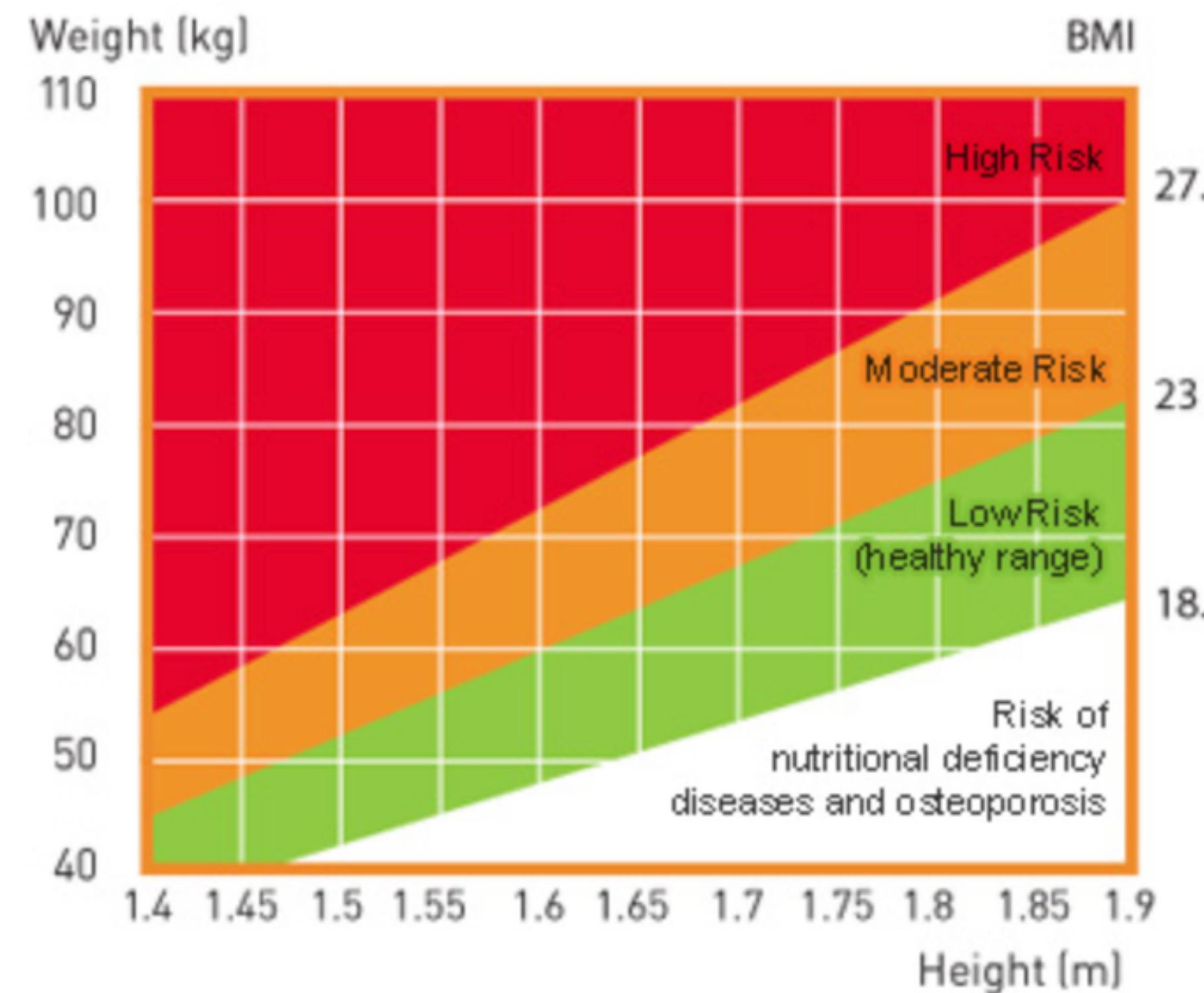
2 Recent studies have shown that many Asian populations, including Singaporeans, have higher proportion of body fat compared to Caucasians of the same age, gender and BMI.

3 These studies also showed that Asians have increased risk for cardiovascular diseases and diabetes mellitus at relatively low BMI levels. In Singapore, about half of adult Singaporeans with BMI of 22 to 24 kg/m² have at least one cardiovascular risk factor.

Lab

Advance BMI Calculator

18.5 TO 22.9 LOW RISK 23 TO 27.4 MODERATE RISK 27.5 AND ABOVE HIGH RISK



Note: BMI should not be used to calculate health risk in pregnant women, people with muscular build and the elderly. These BMI ranges also do not apply to youths below 18 years.

Lab

Advanced BMI Calculator

Weight (kg): 45

Height (cm): 150

Age: 16

Gender: F

Singapore (Y/N): Y

Your BMI is 20, you are a slightly above the healthy range recommended for Singapore female(recommended range is 18.5-22.9)

While Loop

```
while True:  
    print("Hello World")  
    print("Bye")
```

While Loop

```
while True:  
    print("Hello World")  
    print("Bye")
```

While Loop

i = 0

while i < 10:

 print("Hello World")

 i = i + 1

 print("Bye")

While Loop

```
i = 0
while i < 10:
    print("Hello World")
    i = i + 1
print("Bye")
```

While Loop

```
i = 0
while i < 10:
    print("Hello World", i)
    i = i + 1
print("Bye")
```

Hello World, 0
Hello World, 1
Hello World, 2
Hello World, 3
Hello World, 4
Hello World, 5
Hello World, 6
Hello World, 7
Hello World, 8
Hello World, 9
Bye

While Loop

i = 0

while i < 10:

 print("Hello World", i)

 i = i + 1

"Hello World"

"Bye"

While Loop

While statement

while condition: ← Colon

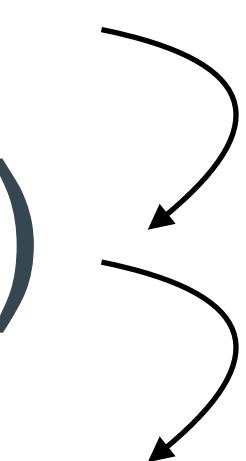
do if condition is met

Indentation



While Loop

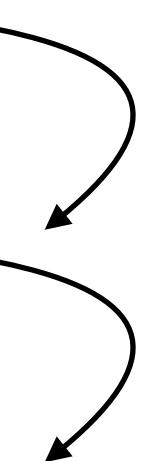
```
i = 0  
while i < 10:      True  
    print("Hello World", i)  
    i = i + 1  
print("Bye")
```



Hello World, 0

While Loop

```
i = 0
while i < 10:      True
    print("Hello World", i)
    i = i + 1
print("Bye")
```



Hello World, 0
Hello World, 1
Hello World, 2
Hello World, 3
Hello World, 4
Hello World, 5
Hello World, 6
Hello World, 7
Hello World, 8
Hello World, 9

While Loop

```
i = 0  
while i < 10:          False  
    print("Hello World", i)  
    i = i + 1  
print("Bye")
```

Hello World, 0
Hello World, 1
Hello World, 2
Hello World, 3
Hello World, 4
Hello World, 5
Hello World, 6
Hello World, 7
Hello World, 8
Hello World, 9
Bye

While Loop

While Loop vs If

```
i = 0  
while i < 10:  
    print("Hello World", i)  
    i = i + 1  
print("Bye")
```

```
i = 0  
if i < 10:  
    print("Hello World", i)  
    i = i + 1  
print("Bye")
```

While Loop

While Loop vs If

i = 0

while i < 10:

 print("Hello World", i)

 i = i + 1

print("Bye")

Hello World, 0

Hello World, 1

Hello World, 2

Hello World, 3

Hello World, 4

Hello World, 5

Hello World, 6

Hello World, 7

Hello World, 8

Hello World, 9

Bye

While Loop

While Loop vs If

Hello World, 0
Bye

```
i = 0
if i < 10:
    print("Hello World", i)
    i = i + 1
print("Bye")
```

While Loop

Common Mistakes

Hi
Hello World, 0
Hello World, 1
Hello World, 2
Hello World, 3
Hello World, 4
Bye

While Loop

Common Mistakes - #1

Hi
Bye

```
i = 0
print("Hi")
while i > 5:
    print("Hello World", i)
    i = i + 1
print("Bye")
```

While Loop

Common Mistakes - #1

Hi
Bye

```
i = 0
print("Hi")
while i > 5:    ← False
    print("Hello World", i)
    i = i + 1
print("Bye")
```

While Loop

Common Mistakes - #2

Hi
Hello World, 0
Hello World, -1
Hello World, -2
Hello World, -3
Hello World, -4
Hello World, -5

...

```
i = 0
print("Hi")
while i < 5:
    print("Hello World", i)
    i = i - 1
print("Bye")
```

While Loop

Common Mistakes - #2

Hi
Hello World, 0
Hello World, -1
Hello World, -2
Hello World, -3
Hello World, -4
Hello World, -5

1 / 1

```
i = 0
print("Hi")
while i < 5:
    print("Hello World", i)
    i = i - 1
print("Bye")
```

True

Decrementing

While Loop

Common Mistakes - #3

Hi
Bye

```
i = 0
print("Hi")
while i == 5:
    print("Hello World", i)
    i = i + 1
print("Bye")
```

While Loop

Common Mistakes - #3

Hi
Bye

```
i = 0
print("Hi")
while i == 5: ← False
    print("Hello World", i)
    i = i + 1
print("Bye")
```

While Loop

Common Mistakes - #4

Hi

Hello World, 0

Hello World, 1

Hello World, 2

Hello World, 3

Hello World, 4

Hello World, 5

Bye

i = 0

print("Hi")

while i <= 5:

 print("Hello World", i)

 i = i + 1

print("Bye")

While Loop

Common Mistakes - #4

Hi
Hello World, 0
Hello World, 1
Hello World, 2
Hello World, 3
Hello World, 4
Hello World, 5
Bye

```
i = 0
print("Hi")
while i <= 5:           ← i < 5 Off by 1
    print("Hello World", i)
    i = i + 1
print("Bye")
```

Lab

Loop

BMI calculator

Loop

Weight (kg): 45

...

Your BMI is 20, you are a slightly above the healthy range recommended for Singapore female(recommended range is 18.5-22.9)

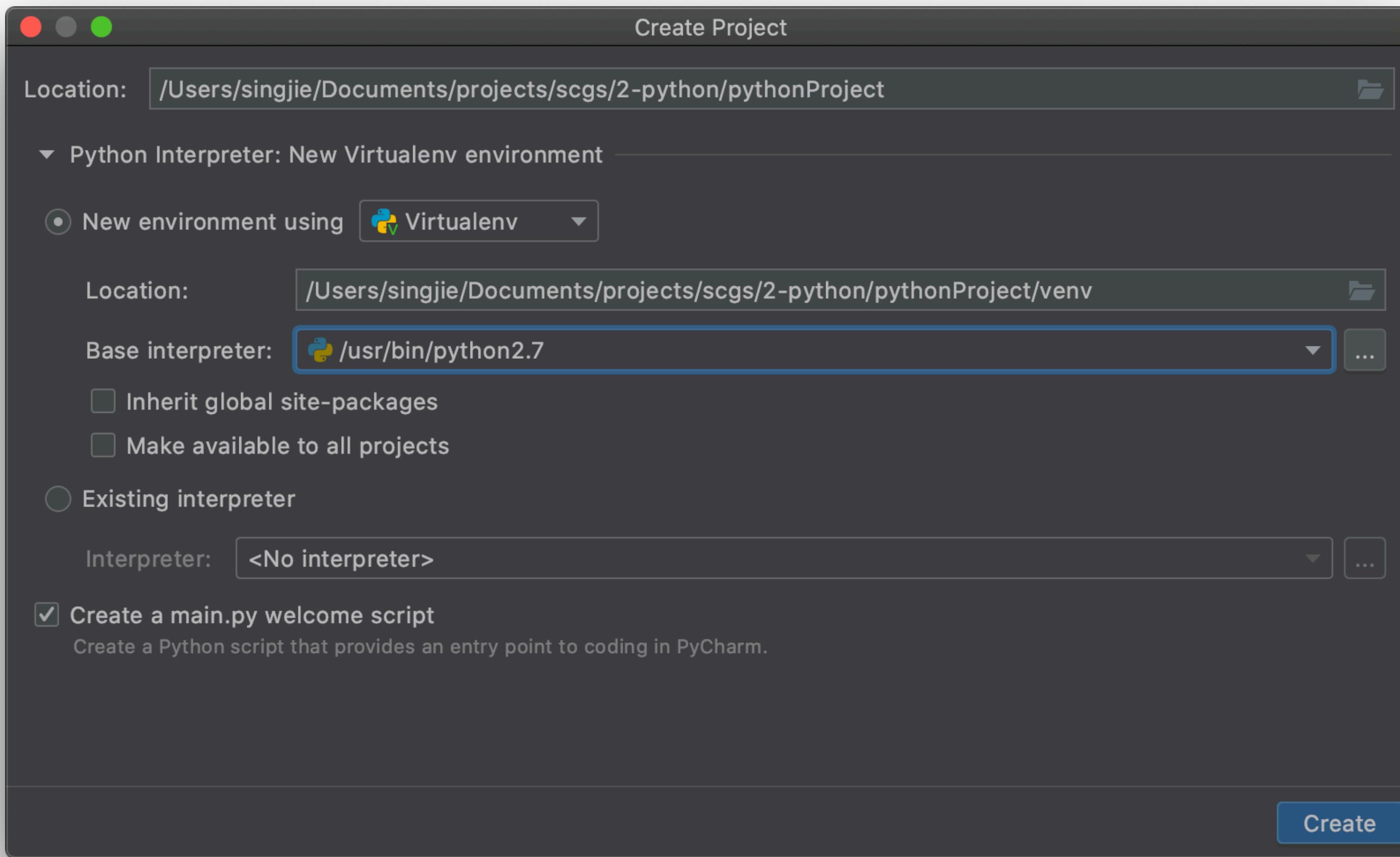
Press 'r' to restart, other keys to quit

Recap

- Setup IDE
- Hello World
- Variables
- Boolean
- Input / Output
- Math
- Decision Making
- Loops
- BMI Calculator

Recap

Setup IDE



Recap

Hello World

```
print("Hello World - I am from SCGS")
```

Recap

Variables

name = "Grace"

age = 14

birthday = "29 May 2006"

Recap

Boolean

is_door_locked = False

is_door_locked = True

Recap

Input / Output

```
value = input("What's your name? ")  
print(value)
```

Recap

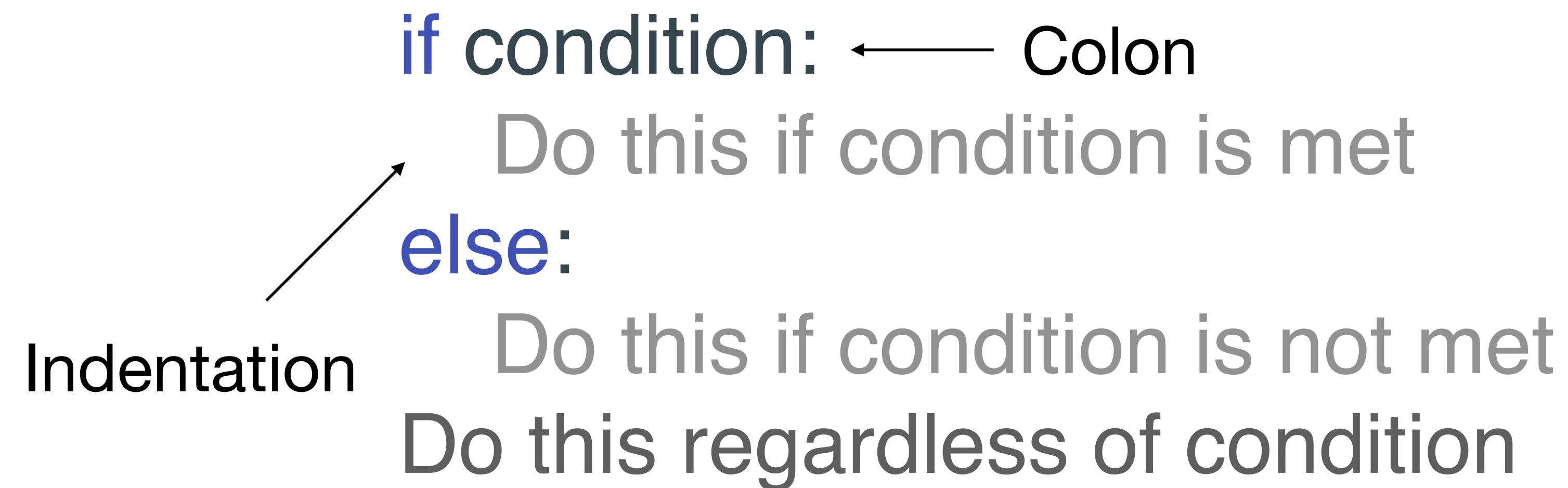
Math

```
i = 25 + 25  
print('The value of i is', i)
```

Recap

Decision Making - If / Else

Indentation **if condition:** —— Colon
 Do this if condition is met
else:
 Do this if condition is not met
 Do this regardless of condition



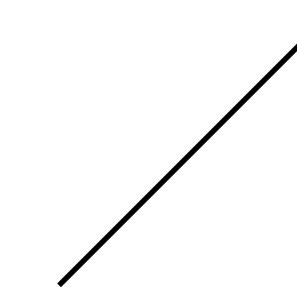
Recap

Loops - While

while condition: — Colon

do if condition is met

Indentation



Recap

BMI Calculator

Weight (kg): 45

Height (cm): 150

Age: 16

Gender: F

Singapore (Y/N): Y

Your BMI is 20, you are a slightly above the healthy range recommended for Singapore female(recommended range is 18.5–22.9)

Press 'r' to restart, other keys to quit