Python coding

wk01 :

Introduction to coding Python

Basic Python coding for HCit

INJE University

1st semester, 2021

Email : chaos21c@gmail.com

My ID (월 5/6교시)

PA01	장명재	PA14	강병호
PA02	정성엽	PA15	한채린
PA03	김범석	PA16	강지민
PA04	김재준	PA17	김준영
PA05	서준용	PA18	김찬종
PA06	석시현	PA19	박광선
PA07	여창준	PA20	박민혁
PA08	이승엽	PA21	박승희
PA09	이재희	PA22	박윤후
PA10	이진영	PA23	박희주
PA11	정호상	PA24	설지현
PA12	조현호	PA25	차동근
PA13	최석기	PA26	정민지

Github repo ID → PAnn

My ID (월 7/8교시)
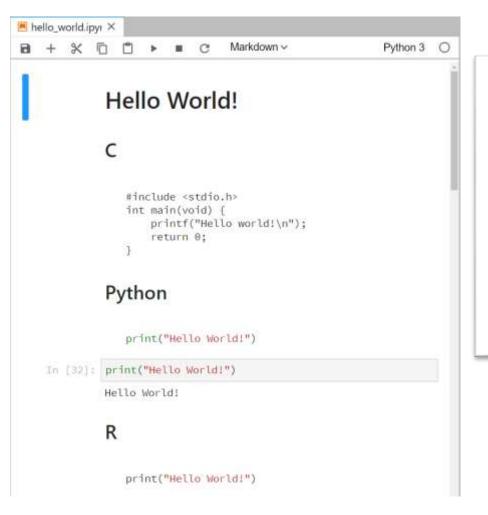
PB01	김동욱
PB02	김민구
PB03	김수웅
PB04	박수현
PB05	원지찬
PB06	이유리
PB07	이유림
PB08	이태영
PB09	임홍섭
PB10	장지예
PB11	정수현
PB12	조현
PB13	조현준
PB14	진한승
PB15	박성규

Github repo ID → PBnn

"Hello World!" DEMO

Hello World!

C

```c
#include <stdio.h>
int main(void) {
    printf("Hello world!\n");
    return 0;
}
```

Python

```python
print("Hello World!")
```

In [32]: `print("Hello World!")`

Hello World!

R

```r
print("Hello World!")
```

Javascript (Node.js)

```javascript
console.log("Hello World!")
```
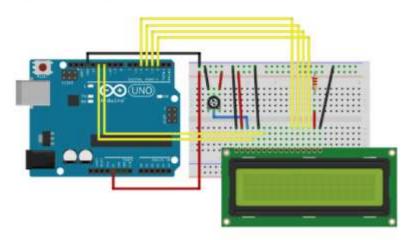
Java

```java
public class HelloWorld {
    public static void main(String[] args) {
        // Prints "Hello, World" to the terminal window.
        System.out.println("Hello, World");
    }
}
```
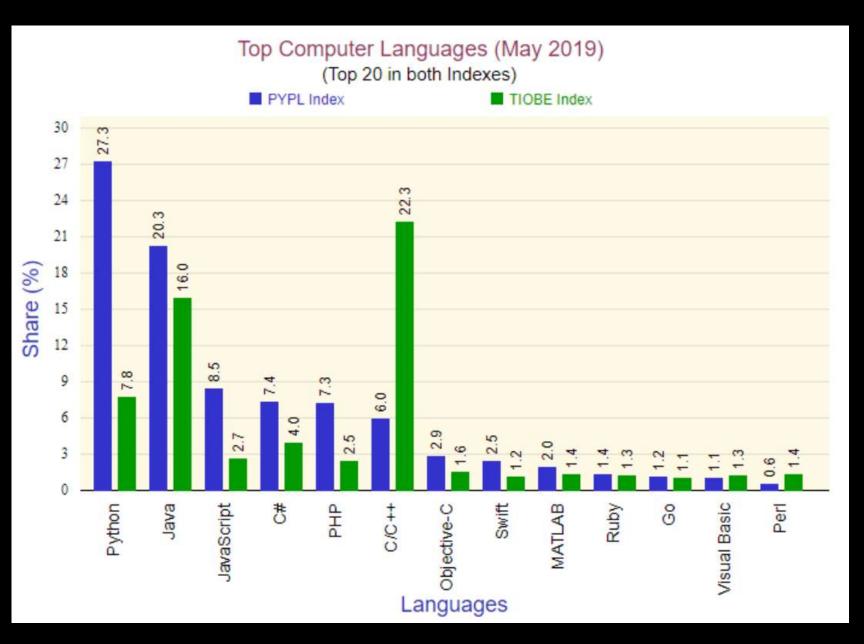
Arduino

```
// include the library code:
#include <LiquidCrystal.h>

// initialize the library by associating any needed LCD interface pin
// with the arduino pin number it is connected to
const int rs = 12, en = 11, d4 = 5, d5 = 4, d6 = 3, d7 = 2;
LiquidCrystal lcd(rs, en, d4, d5, d6, d7);

void setup() {
  // set up the LCD's number of columns and rows:
  lcd.begin(16, 2);
  // Print a message to the LCD.
  lcd.print("hello, world!");
}

void loop() {
  // set the cursor to column 0, line 1
  // (note: line 1 is the second row, since counting begins with 0):
  lcd.setCursor(0, 1);
  // print the number of seconds since reset:
  lcd.print(millis() / 1000);
}
```
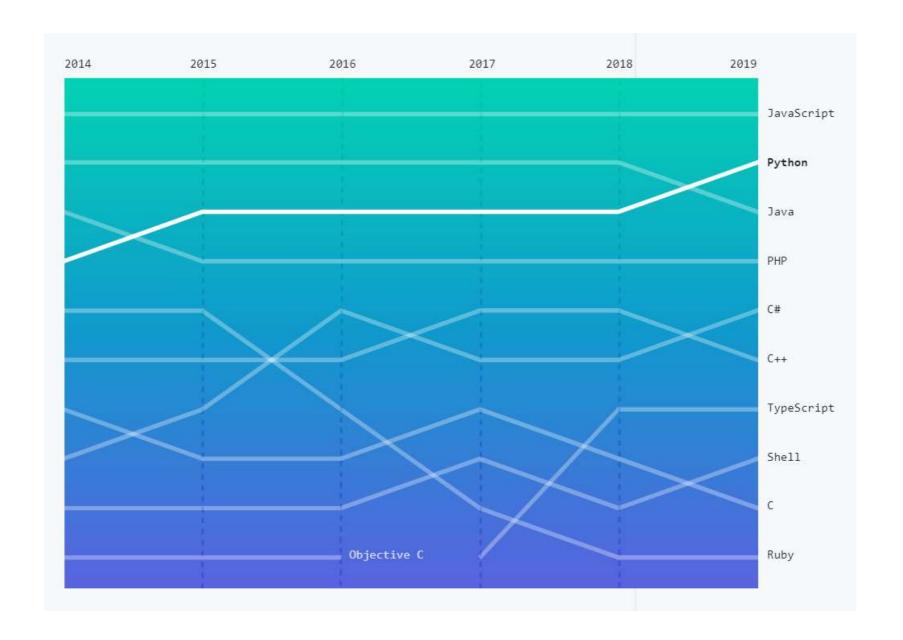
Arduino circuit with LCD

Output on LCD

Top Computer Languages (May 2019)
(Top 20 in both Indexes)

2014 2015 2016 2017 2018 2019

JavaScript
Python
Java
PHP
C#
C++
TypeScript
Shell
C
Objective C
Ruby

PROJECTIONS OF FUTURE TRAFFIC
FOR MAJOR PROGRAMMING LANGUAGES

15%

10%

5%

PYTHON

JAVASCRIPT
JAVA

C#

PHP
C++

2012   2014   2016   2018   2020

Deep Learning

Machine Learning

Artificial Intelligence

Convolutional

Learning

Networks

Deep

Intelligence

hierarchical

methods

Artificial   Data

evolution accuracy
Computer
Calculus simplified
theoretically relationships
humans overlap
neurons patterns approximates
training extracting Receptive
technologies intervention technology
labelled Structured understand complicated definitions pooling
ground-up research layers hierarchically Applications
programs scales Vision building field CNNs Reinforcement modern
successful Propositional systems representation influenced
explanation concepts Feature
experience capabilities idea algorithms comprehension machinery
features deepening
problems consume models input Plateau defined
Higher-level complex model available identified relates discovering
programming differentiates characteristics gradually levels deepness
hidden associated confusion processing generalized definition Machine layer connected learner inputs exposed
evolve traditional set knowledge relate intelligent classification
process abstraction filters
Unsupervised limitations
Parallel automatically
power generalize
computing Predicate brain learn unlabeled identify level Neural visual hierarchy Performance
evaluating
natural
advancing lower-level understanding identifying
deeper techniques capability implementing artificially Supervised actions
mathematical considered architecture information Analysis
mathematicians overlapping comprehend

Machine Learning

Unsupervised Learning

Dimensionality Reduction
- Meaningful Compression
- Structure Discovery
- Big data Visualistaion
- Feature Elicitation

Clustering
- Recommender Systems
- Targetted Marketing
- Customer Segmentation

Supervised Learning

Classification
- Image Classification
- Customer Retention
- Idenity Fraud Detection
- Diagnostics

Regression
- Advertising Popularity Prediction
- Weather Forecasting
- Population Growth Prediction
- Market Forecasting
- Estimating life expectancy

Reinforcement Learning
- Real-time decisions
- Game AI
- Robot Navigation
- Skill Acquisition
- Learning Tasks

A mostly complete chart of
Neural Networks

©2016 Fjodor van Veen - asimovinstitute.org

Legend:
- Backfed Input Cell
- Input Cell
- Noisy Input Cell
- Hidden Cell
- Probablistic Hidden Cell
- Spiking Hidden Cell
- Output Cell
- Match Input Output Cell
- Recurrent Cell
- Memory Cell
- Different Memory Cell
- Kernel
- Convolution or Pool

Network types:
- Perceptron (P)
- Feed Forward (FF)
- Radial Basis Network (RBF)
- Deep Feed Forward (DFF)
- Recurrent Neural Network (RNN)
- Long / Short Term Memory (LSTM)
- Gated Recurrent Unit (GRU)
- Auto Encoder (AE)
- Variational AE (VAE)
- Denoising AE (DAE)
- Sparse AE (SAE)

Machine(Deep) learning with brain chip

임상검사

생체신호

생체영상

유전자

문진 및
진찰

생활습관

SNS

건강관리

감정조절

치료 방법

Mobile python

교재/참고도서

ALL   DOWNLOADED

A1 Sciences

Python Machine
Learning
from Scratch

STEP BY STEP GUIDE WITH SCIKIT-LEARN AND TENSORFLOW
Daniel

61%

PYTHON
PROGRAMMING ILLUSTRATED
FOR BEGINNERS & INTERMEDIATES
THE FUTURE IS HERE!

"Learn By Doing" Approach Step By Step
Ultimate Guide To Mastering Python
WILLIAM SULLIVAN

100%

THAT BOOK O
BLOCKCHAIN
— A ONE-HOUR INTRO —

JONATHAN MORLEY

81%

UPDATED EDITION

BLOCKCHA
REVOLUTION

How the Technology
Behind BITCOIN and
Other CRYPTOCURRENCIES
Is Changing the World

DON TAPSCOTT
and ALEX TAPSCOTT

28%

Sayon Dalta

Reinforcement
Learning with
TensorFlow

A beginner's guide to design try with learning systems
with TensorFlow and OpenAI Gym

SAMPLE

O'REILLY

Hands-On
Machine Learning
with Scikit-Learn
& TensorFlow

SAMPLE

Aurelien

DATA

DEEP
LEARNING
FOR BEGINNERS

Concepts and Algorithms

SAMPLE

MACHIN
LEARNING
For
Absolute Beginners
Second Edition

11%

DATA SC

PYTHON
MACHINE
LEARNING

Practical Guide for Beginners

31%

알기쉬운
파이썬
Python
제4판

파이썬과 함께하는
자료구조의 이해
Data Structures with Python

엔지니어를
위한
파이썬

Introduction to
Machine
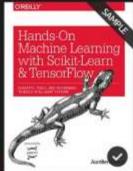Learning
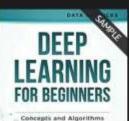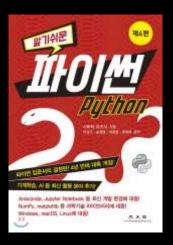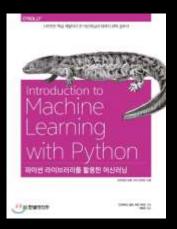with Python
파이썬 라이브러리를 활용한 머신러닝

Hands-On Deep Learning Algorithms with Python `Book` By Sudharsan Ravichandi... 512 pages Jul 2019 Understand basic-to-advanced deep learning algorithms, the mathematical principles behind them, and... **Resume**	**Deep Reinforcement Learning Hands-On - Second Edition** `Book` By Maxim Lapan 826 pages Jan 2020 New edition of the bestselling guide to deep reinforcement learning and how it's used to solve... **Resume**

Hands-On Deep Learning Algorithms with Python

`Book`

By Sudharsan Ravichandi...

512 pages   Jul 2019

Understand basic-to-advanced deep learning algorithms, the mathematical principles behind them, and...

Resume

Deep Reinforcement Learning Hands-On - Second Edition

`Book`

By Maxim Lapan

826 pages   Jan 2020

New edition of the bestselling guide to deep reinforcement learning and how it's used to solve...

Resume

Advanced Deep Learning with Python

`Book`

By Ivan Vasilev

468 pages   Dec 2019

Gain expertise in advanced deep learning domains such as neural networks, meta-learning, graph...

Resume

Deep Learning with TensorFlow 2 and Keras - Second Edition

`Book`

By Antonio Gulli, Amita...

646 pages   Dec 2019

Build machine and deep learning systems with the newly released TensorFlow 2 and Keras for the...

Resume

Python Machine Learning - Third Edition

`Book`

By Sebastian Raschka, V...

770 pages   Dec 2019

Applied machine learning with a solid foundation in theory. Revised and expanded for TensorFlow...

Resume

Hands-On Machine Learning with TensorFlow.js

`Book`

By Kai Sasaki

296 pages   Nov 2019

Get hands-on with the browser-based JavaScript library for training and deploying machine learning...

Resume

Hands-On Deep Learning for IoT

`Book`

By Dr. Mohammad Abdur R...

308 pages   Jun 2019

Implement popular deep learning techniques to make your IoT applications smarter

Resume

Machine Learning Quick Reference

`Book`

By Rahul Kumar

294 pages   Feb 2019

Your hands-on reference guide to developing, training, and optimizing your machine learning models

Resume

Deep Learning Quick Reference

`Book`

By Mike Bernico

272 pages   Mar 2018

Dive deeper into neural networks and get your models trained, optimized with this quick reference...

Resume

Intelligent Projects Using Python

`Book`

By Santanu Pattanayak

342 pages   Jan 2019

Implement machine learning and deep learning methodologies to build smart, cognitive AI projects...

Resume

Machine Learning for Finance

`Book`

By Jannes Klaas

456 pages   May 2019

A guide to advances in machine learning for financial professionals, with working Python code

Resume

Python Deep Learning - Second Edition

`Book`

By Ivan Vasilev, Daniel...

386 pages   Jan 2019

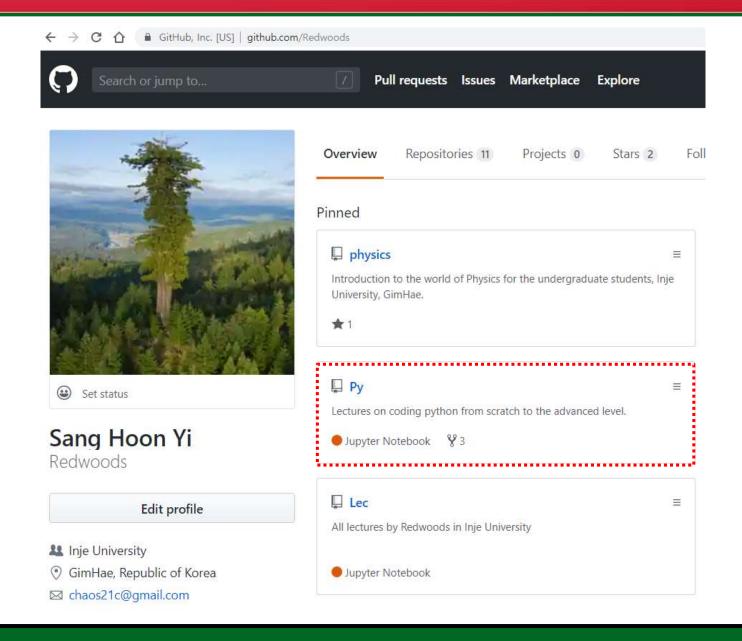Learn advanced state-of-the-art deep learning techniques and their applications using popular...

Resume

성적평가기준

평가방법	평가비율(%)	
중간고사	30%	
기말고사	30%	
출석	15%	
과제(github) 및 퀴즈	25%	
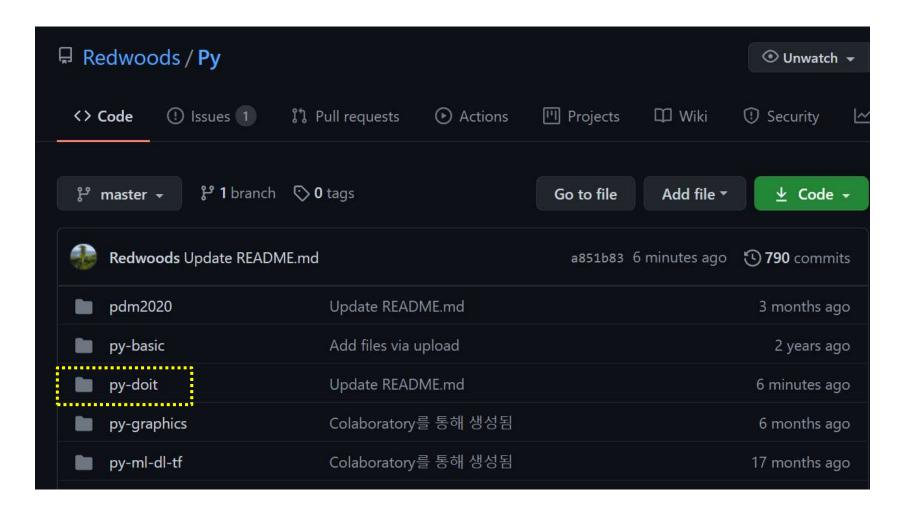
github.com/Redwoods/Py

Redwoods / Py

⊙ Unwatch ▾

<> Code   ⊙ Issues 1   ⅊ Pull requests   ⊙ Actions   ▦ Projects   📖 Wiki   ⊘ Security   ⩘

⎇ master ▾   ⅊ 1 branch   ⬦ 0 tags

Go to file   Add file ▾   ⬇ Code ▾

Redwoods Update README.md   a851b83 6 minutes ago   🕓 790 commits

📁 pdm2020	Update README.md	3 months ago
📁 py-basic	Add files via upload	2 years ago
📁 py-doit	Update README.md	6 minutes ago
📁 py-graphics	Colaboratory를 통해 생성됨	6 months ago
📁 py-ml-dl-tf	Colaboratory를 통해 생성됨	17 months ago

실습 : 결과를 나의 github에 올리기

따라서 한 실습 결과를 각자의 **github repo**에 올리시오.

◆ **Github.com** 에 각자의 **public** 계정을 만드시오.
(이미 **github** 계정이 있으면 불필요)

1. 실습 결과를 올리는 **github repo**를 "**pann 또는 pbnn**"로 만드시오.
(반드시 **README.md** 를 추가)

2. **README.md**에는 "파이썬활용 실습 과제" 입력

3. "**pann 또는 pbnn**" **repo** 에 '**ch01**' 폴더 **upload**

4. 각자의 **github** 주소를 이메일로 보내시오.
https://github.com/accountName/pann or pbnn

Email : chaos21c@gmail.com

- ## **References & good sites**

  ✓ **https://www.anaconda.com/distribution/** **Python download**

  ✓ **https://code.visualstudio.com/download** **VSCode download**

  ✓ **http://www.github.com** **GitHub**

  ✓ **https://drive.google.com/drive/my-drive** **Google drive**

  ✓ **http://colab.research.google.com** **Colab**