



DIGITAL
TALENT
SCHOLARSHIP

DIGITAL TALENT SCHOLARSHIP 2019





DIGITAL
TALENT
SCHOLARSHIP

Sesi 8

AWS SageMaker

dan Pengenalan

Python

Big Data Analytics





DIGITAL
TALENT
SCHOLARSHIP

Amazon SageMaker

- Amazon SageMaker memberi setiap pengembang dan ilmuwan data kemampuan membangun, melatih, dan menerapkan model *machine learning* dengan cepat
- Amazon SageMaker adalah layanan yang dikelola sepenuhnya dan menangani seluruh alur kerja *machine learning* untuk melabeli serta mempersiapkan data, memilih algoritme, melatih model, menyetel, juga mengoptimalkannya untuk penerapan, membuat prediksi, dan mengambil tindakan
- Model akan masuk ke tahap produksi lebih cepat dengan jauh lebih sedikit usaha dan biaya yang lebih rendah



DIGITAL
TALENT
SCHOLARSHIP

Amazon SageMaker

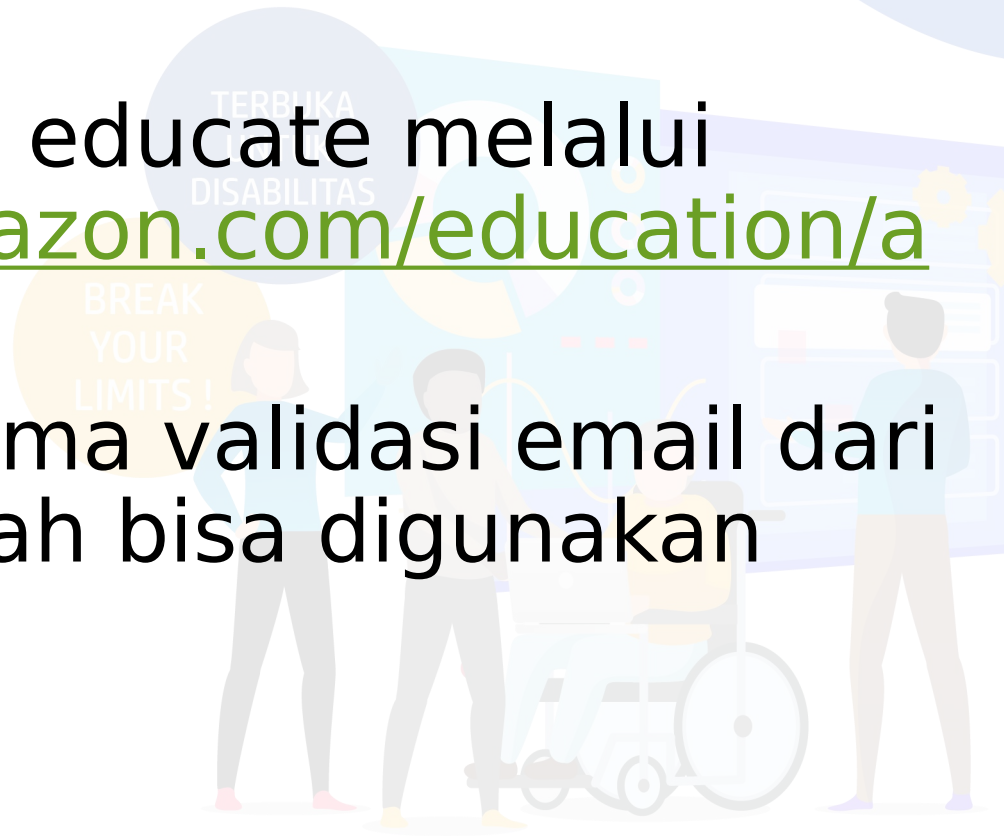
- Amazon SageMaker adalah layanan pembelajaran mesin yang dikelola sepenuhnya
- Ilmuwan dan pengembang data dapat dengan cepat dan mudah membangun dan melatih model pembelajaran mesin, dan kemudian secara langsung menyebarkannya ke lingkungan *hosting* yang siap-produksi
- Sagemaker menyediakan integrasi Jupyter notebook instances untuk kemudahan akses ke sumber data untuk eksplorasi dan analisis, sehingga tidak perlu mengelola *server*



DIGITAL
TALENT
SCHOLARSHIP

Amazon SageMaker - Step by Step

1. Buat akun AWS educate melalui <https://aws.amazon.com/education/awseducate/>
2. Setelah menerima validasi email dari AWS, akun sudah bisa digunakan





DIGITAL
TALENT
SCHOLARSHIP

3. Klik AWS Educate Starter Account

TERBUKA

Get Content

My Content

Classrooms & Credits

Professional Development

AWS Account

Profile

AWS Educate Starter Account



Your cloud journey has only just begun. Use your AWS Educate Starter Account to access the AWS Console and resources, and start building in the cloud!

[AWS Educate Starter Account](#)



Your account has an estimated **150** credits remaining and access will end on **Jun 18, 2020**.

Note: Clicking this button will take you to a third party site managed by Vocareum, Inc.



DIGITAL
TALENT
SCHOLARSHIP

4. Masuk ke AWS Console

 My Classes Help

Get Started





Try out a selection of AWS Services and start building!
Your account has been created and is ready to get started.

Get Started with AWS Starter Account?

Starter Account: apigateway, athena, cloudwatch, codecommit, codedeploy, elasticmapreduce, emr, elasticloadbalancing, iam, inspector, iot, kinesis, lambda, machinelearning, mobilehub, rds, sagemaker, sns, stepfunctions, swf, than domain name purchasing), s3, security, and many more.

Get Started with AWS Account?

Your Starter Account Status

	Active full access (diyanatulhusna@ui.ac.id)
	\$150 credits (estimated)
	364d 22:20:07 remaining term
	0:60 session time

[Account Details](#) [AWS Console](#)

Account?

5. Create IAM role

Sebelum membuat notebook instance, anda harus membuat *role* terlebih dahulu



Database

RDS

DynamoDB

ElastiCache

Neptune

Amazon Redshift

Amazon DocumentDB



Migration & Transfer

AWS Migration Hub

Application Discovery Service

Database Migration Service

Server Migration Service

AWS Transfer for SFTP

Snowball

TERBUKA

CloudSearch

Elasticsearch Service

Kinesis

QuickSight 

Data Pipeline

AWS Glue

MSK



Security, Identity, & Compliance

IAM

Resource Access Manager

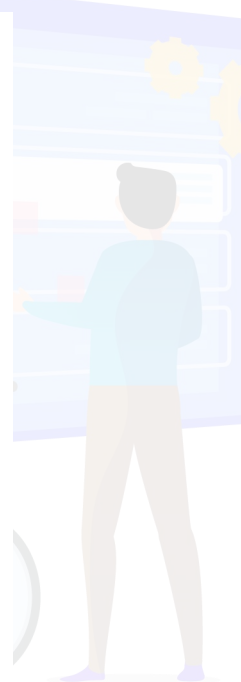
Cognito

Secrets Manager

GuardDuty

Inspector

Amazon Macie 





DIGITAL
TALENT
SCHOLARSHIP

Create role

The screenshot shows the AWS IAM console interface. At the top, the AWS logo and navigation tabs for 'Services' and 'Resource Groups' are visible. The user's profile 'vocstartsoft/user3303' is in the top right. On the left sidebar, the 'Roles' link is highlighted with a red circle. The main content area is titled 'Roles' and contains an informational section 'What are IAM roles?' which explains that IAM roles are a secure way to grant permissions to trusted entities. Below this, a list of examples is provided: IAM user in another account, application code on an EC2 instance, an AWS service, and users from a corporate directory. Further down, 'Additional resources' are listed, including the IAM Roles FAQ, IAM Roles Documentation, a tutorial on setting up cross-account access, and common scenarios for roles. At the bottom of the console, the 'Create role' button is circled in red, next to a disabled 'Delete role' button.

What are IAM roles?

IAM roles are a secure way to grant permissions to entities that you trust. Examples of entities include the following:

- IAM user in another account
- Application code running on an EC2 instance that needs to perform actions on AWS resources
- An AWS service that needs to act on resources in your account to provide its features
- Users from a corporate directory who use identity federation with SAML

IAM roles issue keys that are valid for short durations, making them a more secure way to grant access.

Additional resources:

- [IAM Roles FAQ](#)
- [IAM Roles Documentation](#)
- [Tutorial: Setting Up Cross Account Access](#)
- [Common Scenarios for Roles](#)

Create role Delete role



DIGITAL
TALENT
SCHOLARSHIP

SageMaker → Next: Permissions



Choose the service that will use this role

EC2

Allows EC2 instances to call AWS services on your behalf.

Lambda

Allows Lambda functions to call AWS services on your behalf.

API Gateway	Comprehend	EMR	Kinesis	S3
AWS Backup	Config	ElastiCache	Lambda	SMS
AWS Support	Connect	Elastic Beanstalk	Lex	SNS
Amplify	DMS	Elastic Container Service	License Manager	SWF
AppSync	Data Lifecycle Manager	Elastic Transcoder	Machine Learning	SageMaker
Application Auto Scaling	Data Pipeline	ElasticLoadBalancing	Macie	Security Hub
Application Discovery Service	DataSync	Forecast	MediaConvert	Service Catalog
	DeepLens	Glue	OnsWorks	Step Functions



DIGITAL
TALENT
SCHOLARSHIP

Klik Next: Tags

Create role

1

2

3

▾ Attached permissions policies

The type of role that you selected requires the following policy.

Filter policies ▾

Search

Showing 1 result

Policy name ▾	Used as	Description
AmazonSageMakerFullAccess	Permissions policy (1)	Provides full access to Amazon SageMaker v

* Required

Cancel

Previous

Next: Tags



DIGITAL
TALENT
SCHOLARSHIP

Klik Next: Review

TERBUKA



Services ▾

Resource Groups ▾



vocstartsoft/user330312=diya... ▾

Global ▾

Support ▾

Create role

1

2

3

4

Add tags (optional)

IAM tags are key-value pairs you can add to your role. Tags can include user information, such as an email address, or can be descriptive, such as a job title. You can use the tags to organize, track, or control access for this role. [Learn more](#)

Key	Value (optional)	Remove
<input type="text" value="Add new key"/>	<input type="text"/>	

You can add 50 more tags.

Cancel

Previous

Next: Review



DIGITAL
TALENT
SCHOLARSHIP

1. Input Role name*
2. Create role

Create role

1

2

3

Review

Provide the required information below and review this role before you create it.

Role name*

SageMaker-Sesi12

Use alphanumeric and '+=,.,@-_' characters. Maximum 64 characters.

Role description

Allows SageMaker notebook instances, training jobs, and models to access S3, ECR, and CloudWatch on your behalf.

Maximum 1000 characters. Use alphanumeric and '+=,.,@-_' characters.

Trusted entities

AWS service: sagemaker.amazonaws.com

Policies



AmazonSageMakerFullAccess 

Cancel

Previous

Create role



DIGITAL
TALENT
SCHOLARSHIP

Klik SageMaker yang sudah berhasil dibuat

aws Services Resource Groups

Global Support

ch IAM

hboard

ups

rs

BS

cies

ity providers

ount settings

dential report

ryption keys

✓ The role **SageMaker-Sesi12** has been created.

Create role Delete role

Q Search Showing 15 results

Role name	Description	Trusted entities
<input type="checkbox"/> EMR_AutoScalin...		AWS service: elasticmapreduce and 1 more
<input type="checkbox"/> EMR_DefaultRole		AWS service: elasticmapreduce
<input type="checkbox"/> EMR_EC2_Defa...		AWS service: ec2
<input type="checkbox"/> robomaker_stude...		AWS service: rekognition and 2 more
<input checked="" type="checkbox"/> SageMaker-Sesi12	Allows SageMaker notebook instance...	AWS service: sagemaker
<input type="checkbox"/> sageMakerRoleFull	Allows SageMaker notebook instance...	AWS service: sagemaker



DIGITAL
TALENT
SCHOLARSHIP

- Copy Role ARN (klik icon salin)
- Inilah yang akan kita salin pada saat pembuatan *instance*

TERBUKA



Services ▾

Resource Groups ▾



vocstartsoft/user330312=diya... ▾

Global ▾

Support ▾

ch IAM

hboard

ups

rs

es

cies

ntity providers

ount settings

dential report

ryption keys

Role ARN

[arn:aws:iam::336233536518:role/SageMaker-Sesi12](#)

Role description

Allows SageMaker notebook instances, training jobs, and models to access S3, ECR, and CloudWatch on your behalf. | [Edit](#)

Instance Profile ARNs



Path

/

Creation time

2019-06-20 14:24 UTC+0700

Maximum CLI/API session
duration

1 hour [Edit](#)

Permissions

Trust relationships

Tags

Access Advisor

Revoke sessions

▼ Permissions policies (1 policy applied)

[Attach policies](#)

[+ Add inline policy](#)

6. Klik “Amazon SageMaker”

AWS Management Console

AWS services

Find Services

You can enter names, keywords or acronyms.

 *Example: Relational Database Service, database, RDS*

▼ Recently visited services

 [Amazon SageMaker](#)

▼ All services

Compute

EC2
Lightsail 
ECR
ECS
EKS

Machine Learning

Amazon SageMaker
Amazon Comprehend
AWS DeepLens
Amazon Lex
Amazon Rekognition



6. Klik “Create notebook instance”

Amazon SageMaker

Dashboard

Search^{Beta}

▼ Ground Truth

- Labeling jobs
- Labeling datasets
- Labeling workforces

▼ Notebook

- Notebook instances
- Lifecycle configurations
- Git repositories

Amazon SageMaker > Notebook instances

Notebook instances Actions ▼ Create notebook instance

Search notebook instances

Name ▼	Instance	Creation time ▼	Status ▼	Actions
There are currently no resources.				



DIGITAL
TALENT
SCHOLARSHIP

Masukkan Notebook instance name



Services ▾

Resource Groups ▾



vocstartsoft/user330312=diya... ▾

N. Virginia ▾

[Amazon SageMaker](#) > [Notebook instances](#) > Create notebook instance

Create notebook instance

Amazon SageMaker provides pre-built fully managed notebook instances that run Jupyter notebooks. The notebook instances include example code for common model training and hosting exercises. [Learn more](#)

Notebook instance settings

Notebook instance name

Maximum of 63 alphanumeric characters. Can include hyphens (-), but not spaces. Must be unique within your account in an AWS Region.

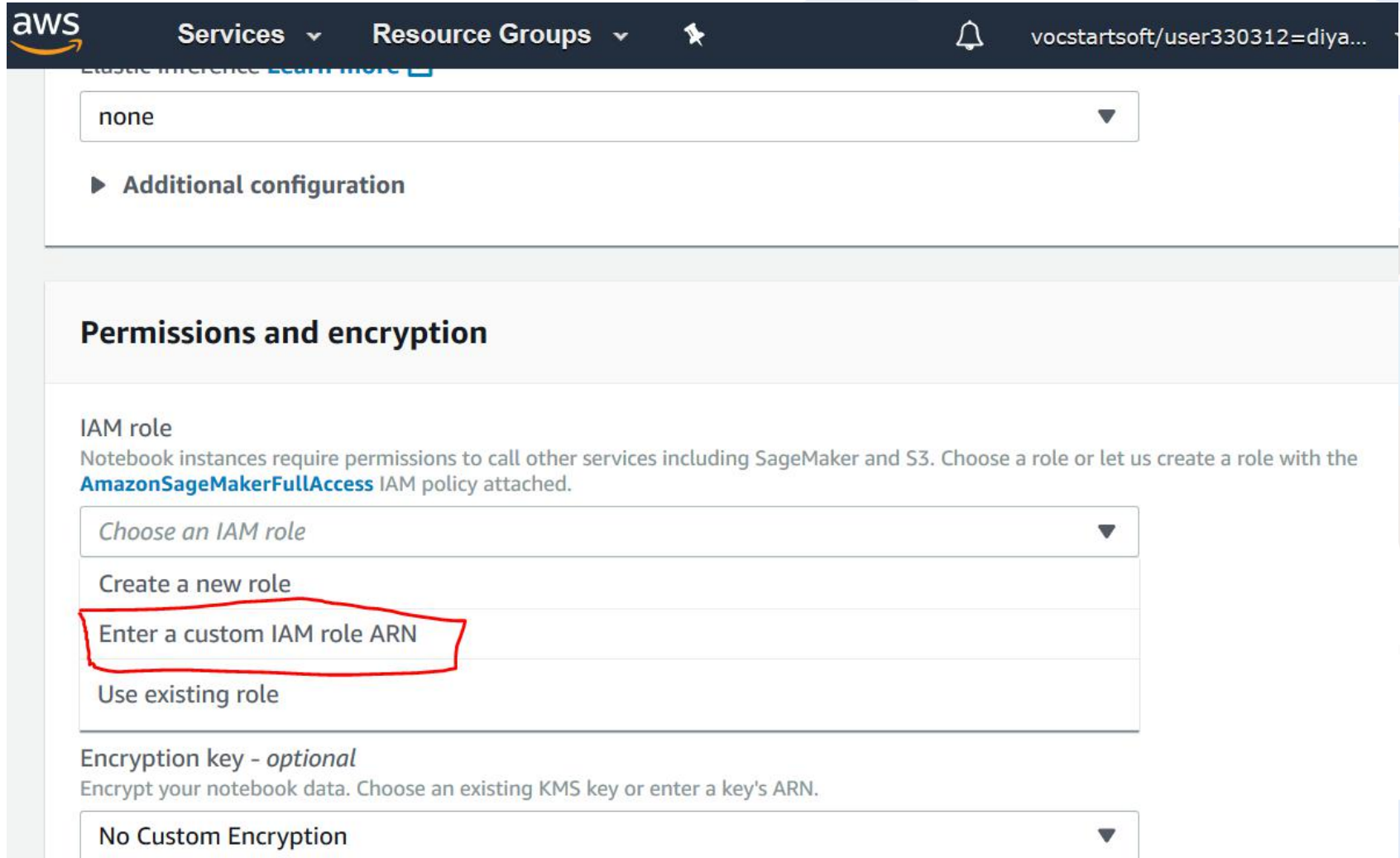
Notebook instance type



Elastic Inference [Learn more](#)

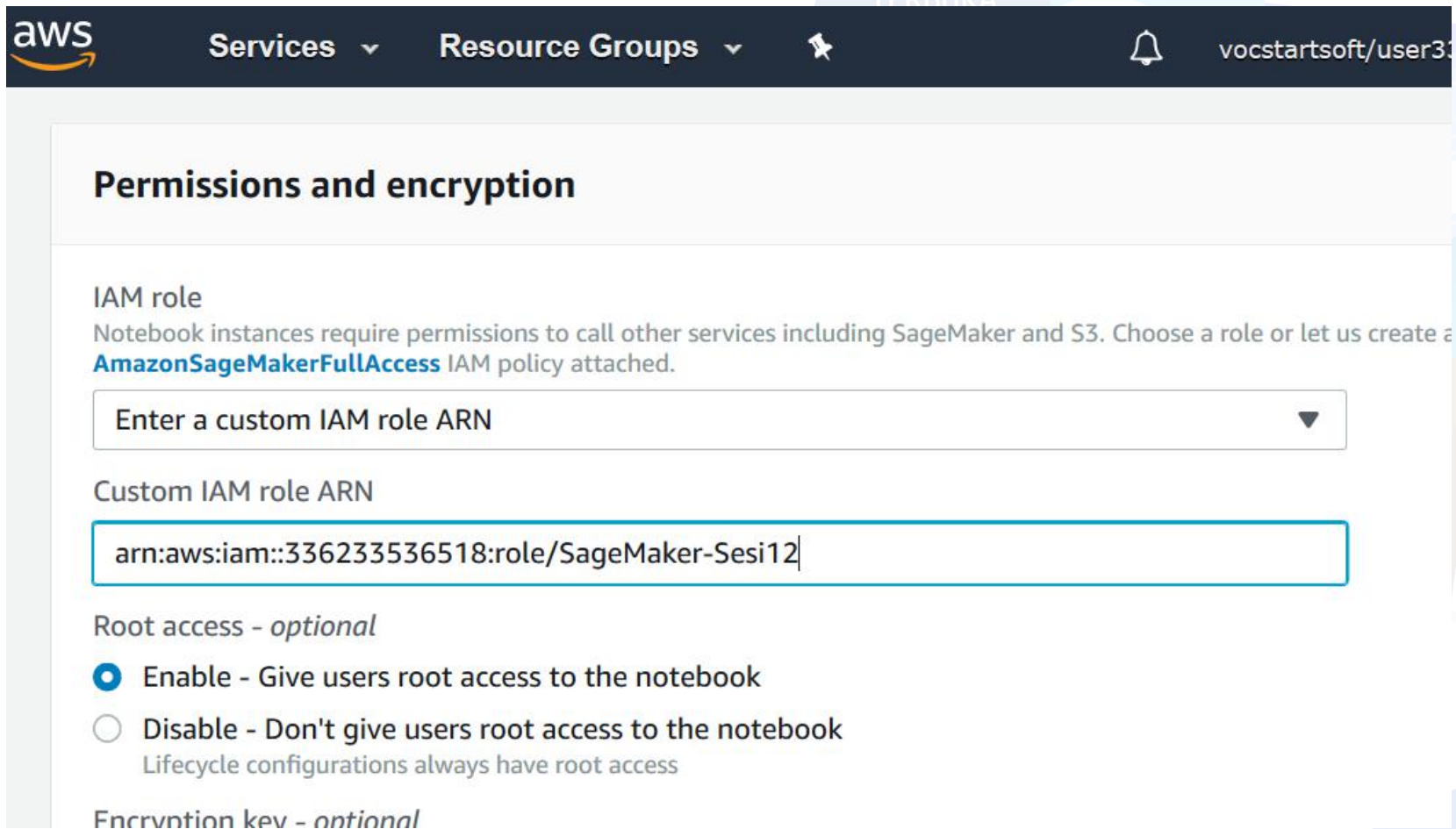


Scroll ke “Permission and encryption”



The screenshot shows the AWS IAM console interface. At the top, the AWS logo is on the left, and navigation links for 'Services' and 'Resource Groups' are in the center. On the right, there is a notification bell icon and a user profile link 'vocstartsoft/user330312=diya...'. Below the navigation bar, there is a dropdown menu currently set to 'none'. Underneath this is a section titled 'Additional configuration'. The main content area is titled 'Permissions and encryption'. It contains a section for 'IAM role' with a descriptive text: 'Notebook instances require permissions to call other services including SageMaker and S3. Choose a role or let us create a role with the [AmazonSageMakerFullAccess](#) IAM policy attached.' Below this text is a list of four options: 'Choose an IAM role', 'Create a new role', 'Enter a custom IAM role ARN', and 'Use existing role'. The 'Enter a custom IAM role ARN' option is highlighted with a red hand-drawn rectangle. Below the IAM role section is another section for 'Encryption key - optional' with the text: 'Encrypt your notebook data. Choose an existing KMS key or enter a key's ARN.' At the bottom of this section is a dropdown menu currently set to 'No Custom Encryption'.

1. Salin role ARN yang sudah dibuat pada langkah sebelumnya
2. Klik “Create notebook instance”

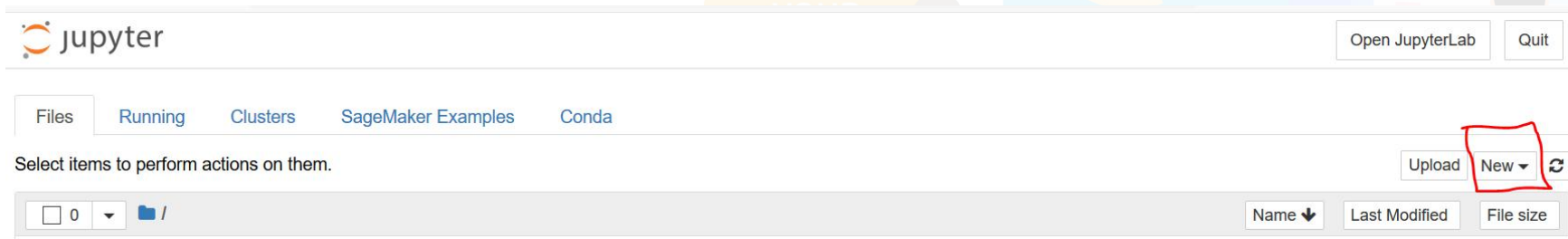


The screenshot shows the AWS IAM console interface for creating a SageMaker notebook instance. The top navigation bar includes the AWS logo, 'Services', 'Resource Groups', a pin icon, a notification bell, and the user profile 'vocstartsoft/user3'. The main section is titled 'Permissions and encryption'. Under the 'IAM role' heading, it states: 'Notebook instances require permissions to call other services including SageMaker and S3. Choose a role or let us create a [AmazonSageMakerFullAccess](#) IAM policy attached.' Below this is a dropdown menu with the text 'Enter a custom IAM role ARN'. The 'Custom IAM role ARN' section shows a text input field containing 'arn:aws:iam::336233536518:role/SageMaker-Sesi12'. The 'Root access - optional' section has two radio buttons: 'Enable - Give users root access to the notebook' (which is selected) and 'Disable - Don't give users root access to the notebook' (with a note that 'Lifecycle configurations always have root access'). The 'Encryption key - optional' section is partially visible at the bottom.



urations

- Anda sudah bisa menggunakan Jupyter
- Klik “New” lalu pilih “conda_python3”





DIGITAL
TALENT
SCHOLARSHIP

Anda sudah bisa menjalankan program Python



jupyter Untitled Last Checkpoint: 2 minutes ago (autosaved)

The screenshot displays the Jupyter Notebook interface. At the top, there is a menu bar with options: File, Edit, View, Insert, Cell, Kernel, Widgets, and Help. Below the menu bar is a toolbar containing icons for saving, creating a new file, undo, redo, copy, paste, and running code. The main area shows two input cells. The first cell, labeled 'In [1]:', contains the code `print ("Hello, Python!")` and has been executed, resulting in the output 'Hello, Python!'. The second cell, labeled 'In []:', is currently empty and ready for input.

```
In [1]: ▶ print ("Hello, Python!")  
Hello, Python!  
  
In [ ]: ▶ |
```

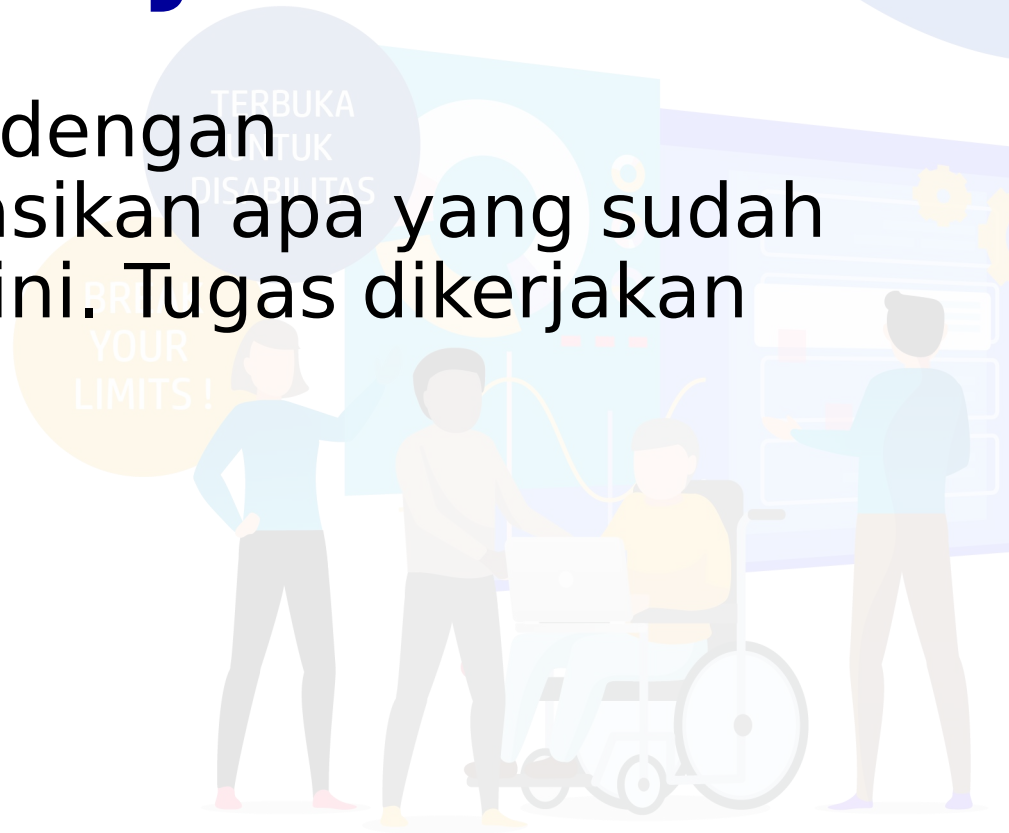
TERBUKA



DIGITAL
TALENT
SCHOLARSHIP

Lab - Mini Project

1. Buatlah Program dengan mengimplementasikan apa yang sudah dipelajari sejauh ini. Tugas dikerjakan berkelompok

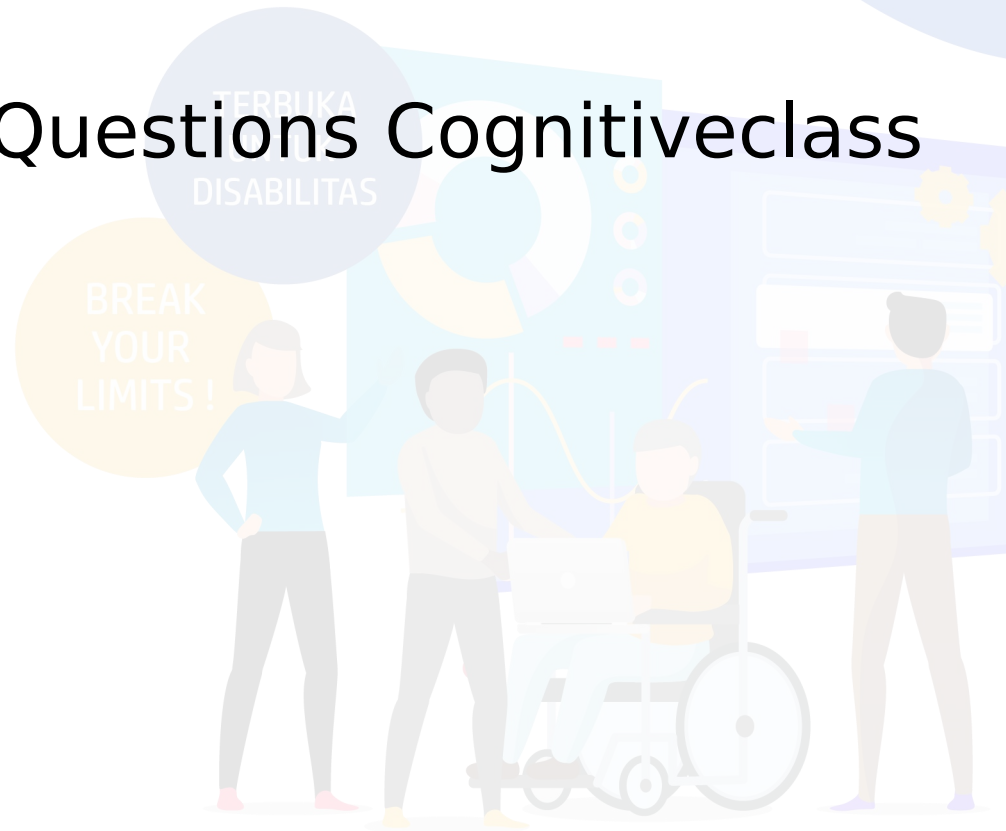




DIGITAL
TALENT
SCHOLARSHIP

Tugas - Review Questions DS0105EN

1. Kerjakan Review Questions Cognitiveclass
Module 2





DIGITAL
TALENT
SCHOLARSHIP

Pengenalan Python

Big Data Analytic





DIGITAL
TALENT
SCHOLARSHIP

Programming - Absolute Basics

- Program membuat computer dapat digunakan. *Language is the keyword.* Tanpa program, komputer tidak lebih dari sebuah objek
- Pemrograman komputer adalah tindakan menyusun/menulis elemen-elemen bahasa pemrograman yang dipilih dalam bentuk perintah yang menghasilkan efek sesuai dengan yang diinginkan
- Efek bisa berbeda di setiap kasus, tergantung dari imajinasi, pengetahuan, dan pengalaman seorang programmer



DIGITAL
TALENT
SCHOLARSHIP

Programming - Absolute Basics

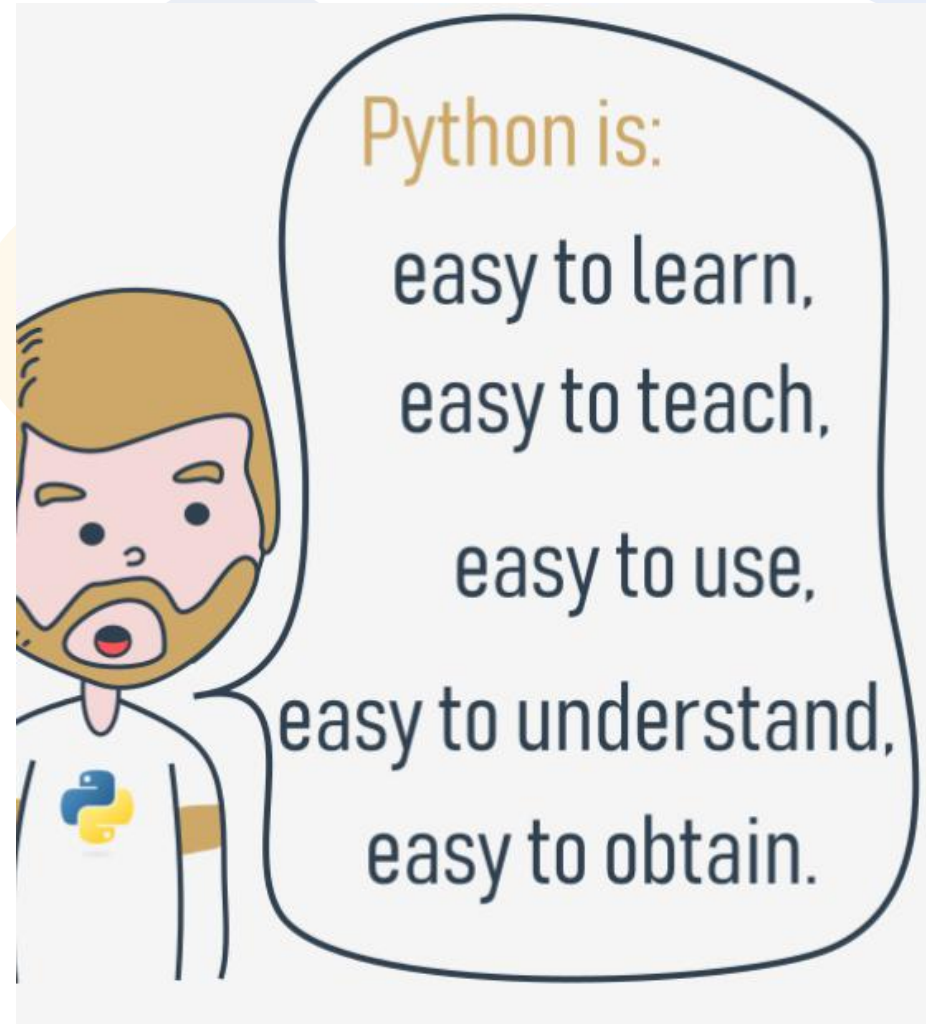
- Bahasa pemrograman
 - Alfabet – Program harus ditulis dalam bentuk *script* yang dapat dikenali
 - Leksikal – setiap Bahasa pemrograman memiliki *dictionary*
 - *Syntactically* – setiap Bahasa memiliki aturan-aturan yang harus dipatuhi
 - *Semantically* – program harus masuk akal
- 2 cara untuk mengubah program dari Bahasa pemrograman tingkat tinggi menjadi Bahasa mesin:
 - Compilation
 - Interpretation

TERBUKA
UNTUK

BREAK
LIMITS!

Pengenalan Python

- Python – Interpreted language. Python is free
- Widely-used, object-oriented, high-level programming language with dynamic semantics
- Python dibuat oleh Guido van Rossum



Popularity of Program ming Language

Pierre Carbonnelle
(2019)

Worldwide, Jun 2019 compared to a year ago:

Rank	Change	Language	Share	Trend
1		Python	28.08 %	+4.7 %
2		Java	20.51 %	-1.8 %
3		Javascript	8.29 %	-0.2 %
4	↑	C#	7.41 %	-0.5 %
5	↓	PHP	6.96 %	-1.2 %
6		C/C++	5.76 %	-0.4 %
7		R	4.15 %	-0.0 %
8		Objective-C	2.82 %	-0.6 %
9		Swift	2.36 %	-0.4 %
10		Matlab	1.95 %	-0.3 %
11	↑	TypeScript	1.69 %	+0.2 %
12	↓	Ruby	1.42 %	-0.3 %
13	↑↑↑	Kotlin	1.4 %	+0.5 %
14	↓	VBA	1.33 %	-0.1 %
15	↑↑	Go	1.19 %	+0.3 %
16	↓	Scala	1.13 %	-0.1 %
17	↓↓↓	Visual Basic	1.09 %	-0.1 %
18		Perl	0.59 %	-0.2 %



DIGITAL
TALENT
SCHOLARSHIP

Download dan Install Python

- **Aktifitas kelas** – Instalasi Python dengan Anaconda
- Anaconda merupakan distribution open source yang memberikan kemudahan dalam penggunaan Python. Dpat dijalankan di OS: Linux, Windows, and Mac OS X
- Link download:
<https://www.anaconda.com/distribution/>
- RUN Python melalui spyder : buat program

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

 • **Print!** adalah nama fungsi



DIGITAL
TALENT
SCHOLARSHIP

The print() function - instructions

Lihat efek dari masingcode berikut

```
1 print("The itsy bitsy spider climbed up the waterspout.")  
2 print("Down came the rain and washed the spider out.")
```

```
1 print("The itsy bitsy spider\nclimbed up the waterspout.")  
2 print()  
3 print("Down came the rain\nand washed the spider out.")
```

```
1 print("My", "name", "is", sep="_", end="*")  
2 print("Monty", "Python.", sep="*", end="*\n")
```

- Fungsi **print** merupakan build in function

		Built-in Functions		
<code>abs()</code>	<code>delattr()</code>	<code>hash()</code>	<code>memoryview()</code>	<code>set()</code>
<code>all()</code>	<code>dict()</code>	<code>help()</code>	<code>min()</code>	<code>setattr()</code>
<code>any()</code>	<code>dir()</code>	<code>hex()</code>	<code>next()</code>	<code>slice()</code>
<code>ascii()</code>	<code>divmod()</code>	<code>id()</code>	<code>object()</code>	<code>sorted()</code>
<code>bin()</code>	<code>enumerate()</code>	<code>input()</code>	<code>oct()</code>	<code>staticmethod()</code>
<code>bool()</code>	<code>eval()</code>	<code>int()</code>	<code>open()</code>	<code>str()</code>
<code>breakpoint()</code>	<code>exec()</code>	<code>isinstance()</code>	<code>ord()</code>	<code>sum()</code>
<code>« bytearray()</code>	<code>filter()</code>	<code>issubclass()</code>	<code>pow()</code>	<code>super()</code>
<code>bytes()</code>	<code>float()</code>	<code>iter()</code>	<code>print()</code>	<code>tuple()</code>
<code>callable()</code>	<code>format()</code>	<code>len()</code>	<code>property()</code>	<code>type()</code>
<code>chr()</code>	<code>frozenset()</code>	<code>list()</code>	<code>range()</code>	<code>vars()</code>
<code>classmethod()</code>	<code>getattr()</code>	<code>locals()</code>	<code>repr()</code>	<code>zip()</code>
<code>compile()</code>	<code>globals()</code>	<code>map()</code>	<code>reversed()</code>	<code>__import__()</code>



Tipe Data- Numeric

1. int – bilangan bulat dengan Panjang tidak terbatas
2. long- merupakan long integers(ada pada Python 2.x, tidak digunakan lagi di Python 3.x).
3. float- bilangan pecahan
4. complex- bilangan kompleks

```
myComplex = 3 + 4j
```

#create a variable with integer value.

```
a=100
print("The type of variable having value",
a, "is ", type(a))
```

#create a variable with float value.

```
b=10.2345
print("The type of variable having value",
b, " is ", type(b))
```

#create a variable with complex value.

```
c=100+3j
print("The type of variable having value",
c, " is ", type(c))
```

```
Python 3.4.4 Shell
File Edit Shell Debug Options Window Help
Python 3.4.4 (v3.4.4:737efcadf5a6, Dec 20 2015, 19:28:18) [MSC v.1600 32 bit (Intel)] on win32
Type "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: C:/Python34/python_datatypes.py =====
The type of variable having value 100 is <class 'int'>
The type of variable having value 10.2345 is <class 'float'>
The type of variable having value (100+3j) is <class 'complex'>
>>> |
```

Untuk memeriksa tipe data pada suatu variabel kita bisa menggunakan fungsi type()

Tipe Data - String

1. Char:
Karakter,
contoh 'R'.
2. String:
Kumpulan
karakter,
contoh "aku
lagi makan".

```
nama = "Ivan"  
jenis_kelamin = 'L'  
alamat = ""  
    Jl. Suka Karya, No 32. RT Kode,  
    Kelurahan Mawar, Jakarta  
""  
agama = 'islam'
```

Penulisan tipe data teks harus diapit dengan tanda petik. Bisa menggunakan petik tunggal ('...'), ganda ("..."), dan tiga ("..." atau "...").

Tipe Data - Boolean

- Tipe data *boolean* adalah tipe data yang hanya memiliki dua nilai yaitu True dan False atau 0 dan 1.
- Penulisan True dan False, huruf pertamanya harus kapital dan tanpa tanda

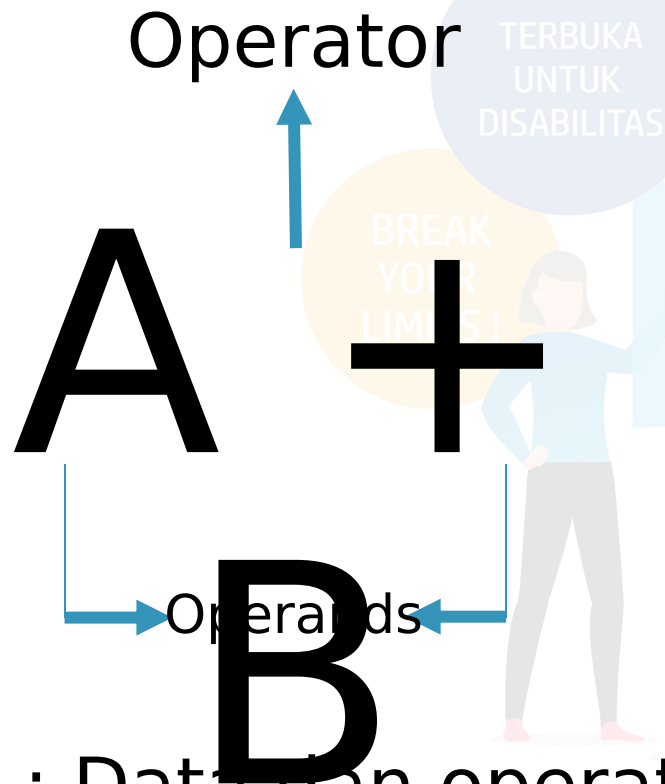
```
bergerak = True
```

```
nyala = 1 #sebenarnya tipenya int, tapi bisa juga menjadi bool
```



DIGITAL
TALENT
SCHOLARSHIP

Operators - data manipulation tools



- Remember : Data dan operator ketika dikoneksikan Bersama membentuk **expressions**.



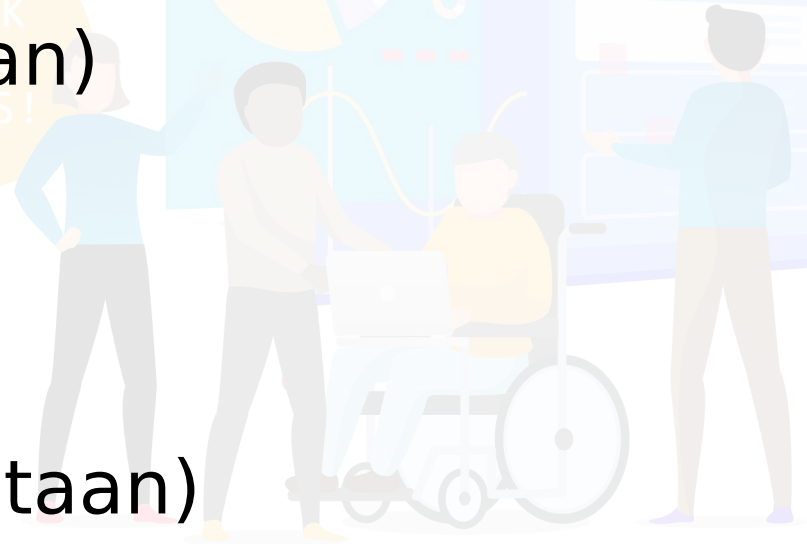
DIGITAL
TALENT
SCHOLARSHIP

Kategori Operator

1. Arithmetic (Aritmatika)
2. Comparison (Perbandingan)
3. Assignment (Penugasan)
4. Logical (logika)
5. Bitwise
6. Identity (identitas)
7. Membership (keanggotaan)

TERBUKA
UNTUK
DISABILITAS

BREAK
LIMITS!



Operator - Arithmetic

Python menyediakan akses ke *library* untuk membantu menyelesaikan perhitungan matematika yang kompleks

Opera tor	Nama dan Fungsi	Contoh
+	Penjumlahan, menjumlahkan 2 buah operand	$x + y$
-	Pengurangan, mengurangi 2 buah operand	$x - y$
*	Perkalian, mengalikan 2 buah operand	$x * y$
/	Pembagian, membagi 2 buah operand	x / y
**	Pemangkatan, memangkatkan bilangan	$x ** y$
//	Pembagian bulat, menghasilkan hasil bagi tanpa koma	$x // y$
%	Modulus, menghasilkan sisa pembagian 2 bilangan	$x \% y$

Operator - Comparison

Membandingkan suatu nilai dengan nilai lainnya dan menampilkan hasil perbandingan (True dan False)

Operator	Nama dan Fungsi	Contoh
>	Lebih besar dari - Hasilnya True jika nilai sebelah kiri lebih besar dari nilai sebelah kanan	$x > y$
<	Lebih kecil dari - Hasilnya True jika nilai sebelah kiri lebih kecil dari nilai sebelah kanan	$x < y$
==	Sama dengan - Hasilnya True jika nilai sebelah kiri sama dengan nilai sebelah kanan	$x == y$
!=	Tidak sama dengan - Hasilnya True jika nilai sebelah kiri tidak sama dengan nilai sebelah kanan	$x != y$
>=	Lebih besar atau sama dengan - Hasilnya True jika nilai sebelah kiri lebih besar atau sama dengan nilai sebelah kanan	$x >= y$
<=	Lebih kecil atau sama dengan - Hasilnya True jika nilai sebelah kiri lebih kecil atau sama dengan nilai sebelah kanan	$x <= y$

Operator - Assignment

Operator *Assignment* menempatkan nilai dalam suatu variable.

Operator	Penjelasan	Contoh
=	Menugaskan nilai yang ada di kanan ke operand yang ada di sebelah kiri	$c = a + b$ menugaskan $a + b$ ke c
+=	Menambahkan operand yang di kanan dengan operand yang ada di kiri dan hasilnya di tugaskan ke operand yang di kiri	$c += a$ sama dengan $c = c + a$
-=	Mengurangi operand yang di kanan dengan operand yang ada di kiri dan hasilnya di tugaskan ke operand yang di kiri	$c -= a$ sama dengan $c = c - a$
*=	Mengalikan operand yang di kanan dengan operand yang ada di kiri dan hasilnya di tugaskan ke operand yang di kiri	$c *= a$ sama dengan $c = c * a$
/=	Membagi operand yang di kanan dengan operand yang ada di kiri dan hasilnya di tugaskan ke operand yang di kiri	$c /= a$ sama dengan $c = c / a$
**=	Memangkatkan operand yang di kanan dengan operand yang ada di kiri dan hasilnya ditugaskan ke operand yang di kiri	$c **= a$ sama dengan $c = c ** a$
//=	Melakukan pembagian bulat operand di kanan terhadap operand di kiri dan hasilnya disimpan di operand yang di kiri	$c //= a$ sama dengan $c = c // a$

Operator - Logical

Operator logika adalah operator yang digunakan untuk melakukan operasi logika.

Operator	Penjelasan	Contoh
and	Hasilnya adalah True jika kedua operandnya bernilai benar	x and y
or	Hasilnya adalah True jika salah satu atau kedua operandnya bernilai benar	x or y
not	Hasilnya adalah True jika operandnya bernilai salah (kebalikan nilai)	not x

Operator - Bitwise

TERBUKA
UNTUK

- Operator bitwise adalah operator yang melakukan operasi bit terhadap operand.
- Operator ini beroperasi bit per bit sesuai dengan namanya.
- Sebagai misal, angka 2 dalam bit ditulis 10 dalam notasi biner dan angka 7 ditulis 111
- Pada tabel di bawah ini, misalkan $x = 10$ (0000 1010) dalam biner dan $y = 4$ (0000 0100) dalam

Opera tor	Nama	Contoh
&	Bitwise AND	$x \& y = 0$ (0000 0000)
	Bitwise OR	$x y = 14$ (0000 1110)
~	Bitwise NOT	$\sim x = -11$ (1111 0101)
^	Bitwise XOR	$x \wedge y = 14$ (0000 1110)
>>	Bitwise right shift	$x >> 2 = 2$ (0000 0010)
<<	Bitwise left shift	$x << 2 = 40$ (0010 1000)

Operator - Identitas

- Operator identitas adalah operator yang memeriksa apakah dua buah nilai (atau variabel) berada pada lokasi memori yang sama.

Operat or	Penjelasan	Contoh
is	True jika kedua operand identik (menunjuk ke objek yang sama)	x is True
is not	True jika kedua operand tidak identik (tidak merujuk ke objek yang sama)	x is not True

Operator - Membership

- Operator keanggotaan adalah operator yang digunakan untuk memeriksa apakah suatu nilai atau variabel merupakan anggota atau ditemukan di dalam suatu data (string, list, tuple, set, dan dictionary).

Operat or	Penjelasan	Conto h
in	True jika nilai/variabel ditemukan di dalam data	5 in x
not in	True jika nilai/variabel tidak ada di dalam data	5 not in x

Operator Precedence

Jika bekerja dengan multiple operator, penting untuk menentukan operator mana yang diproses pertama kali

Table 6-9

Python Operator Precedence

<i>Operator</i>	<i>Description</i>
()	You use parentheses to group expressions and to override the default precedence so that you can force an operation of lower precedence (such as addition) to take precedence over an operation of higher precedence (such as multiplication).
**	Exponentiation raises the value of the left operand to the power of the right operand.
~ + -	Unary operators interact with a single variable or expression.
* / % //	Multiply, divide, modulo, and floor division.
+ -	Addition and subtraction.
>> <<	Right and left bitwise shift.
&	Bitwise AND.
^	Bitwise exclusive OR and standard OR.
<= < > >=	Comparison operators.
== !=	Equality operators.
= %= /= //= -= += *= **=	Assignment operators.
Is	Identity operators.
is not	
In	Membership operators.
not in	

Variabel dan Tipe Data

- Variabel merupakan tempat menyimpan data, sedangkan tipe data adalah jenis data yang tersimpan dalam variabel.
- Karakter pada nama variabel bersifat **sensitif (*case-sensitive*)**. Artinya huruf besar dan kecil dibedakan. Misalnya, variabel Ku dan variabel_ku, keduanya adalah variabel yang berbeda
- Nama variabel **tidak boleh menggunakan**

TERBUKA
UNTUK
DISABILITA

BREAK
YOUR
LIMITS!

value



```
nama_variabel = <nilai>
```

```
variabel_ku = "ini isi variabel"  
variabel2 = 20
```

Input Output - Reading

Keyboard Input

- Fungsi input ([prompt]) meminta input atau masukan dari user.
- Bila kita menginput bilangan, misalnya integer lewat fungsi *input()*, maka hasil inputan tersebut adalah string dan bukan integer. Kita harus mengubahnya terlebih dahulu menjadi tipe inte

```
1 ▶ name = input('Masukkan nama: ')\n   print(name)
```

Masukkan nama: budi
budi

```
▶ panjang = input('Masukkan nilai panjang: ')\n  lebar = input('Masukkan nilai lebar: ')\n  luas = int(panjang) * int(lebar)\n  print("Luas =", luas)
```

Masukkan nilai panjang: 7
Masukkan nilai lebar: 8
Luas = 56



DIGITAL
TALENT
SCHOLARSHIP

Lab - Cognitiveclass PY0101EN

1. Module 1 Lab - Write your first Python code!
2. Module 1 Lab - String Operations



Lab

1. Buatlah code untuk menyelesaikan problem matematika sederhana berikut:

$$c = \sqrt{a^2 + b^2}$$

2. Buatlah program yang dapat membandingkan 2 buah nilai apakah sama besar, lebih kecil atau tidak

3. Buatlah program Kalkulator sederhana



DIGITAL
TALENT
SCHOLARSHIP

Referensi

- <https://docs.aws.amazon.com/sagemaker/latest/dg/gs-account.html>
- <https://courses.cognitiveclass.ai>



Referensi

- <https://courses.cognitiveclass.ai>
- Mueller, John Paul. *Beginning Programming with Python for Dummies*, John Wiley & Sons, Incorporated, 2014
- Deitel. *How to program Python*
- <https://www.petanikode.com>
- <https://www.tutorialspoint.com/python>
- <https://developers.google.com/edu/python/lists>
- <https://hiwijaya.com/>
- <https://www.pythonindo.com>



DIGITAL
TALENT
SCHOLARSHIP

IKUTI KAMI



DIGITAL
TALENT
SCHOLARSHIP

- digitalent.kominfo
- digitalent.kominfo
- DTS_kominfo
- Digital Talent Scholarship 2019

Pusat Pengembangan Profesi dan Sertifikasi
Badan Penelitian dan Pengembangan SDM
Kementerian Komunikasi dan Informatika
Jl. Medan Merdeka Barat No. 9
(Gd. Belakang Lt. 4 - 5)
Jakarta Pusat, 10110



digitalent.kominfo.go.id



digitalent.kominfo.go.id