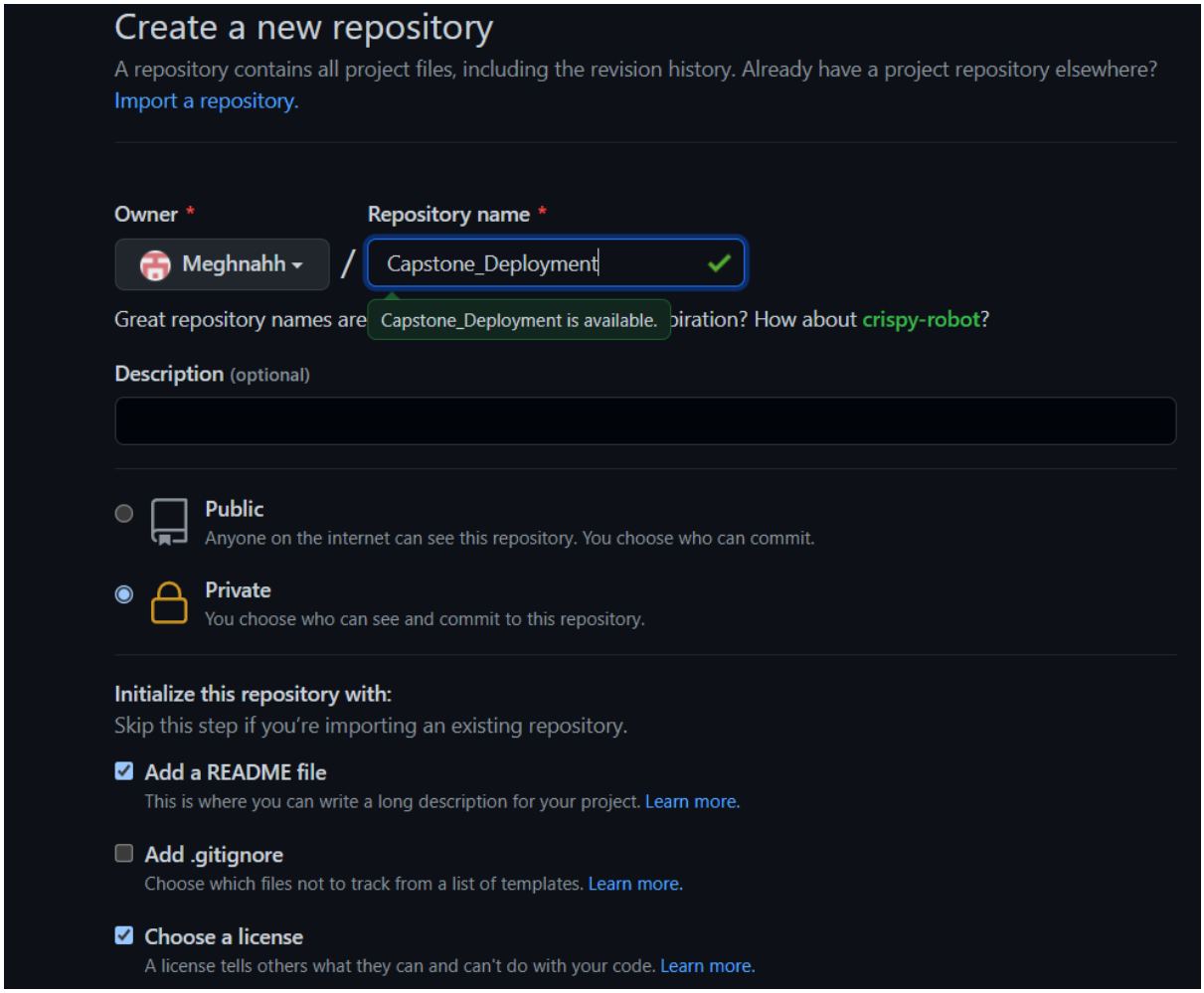
Deployment

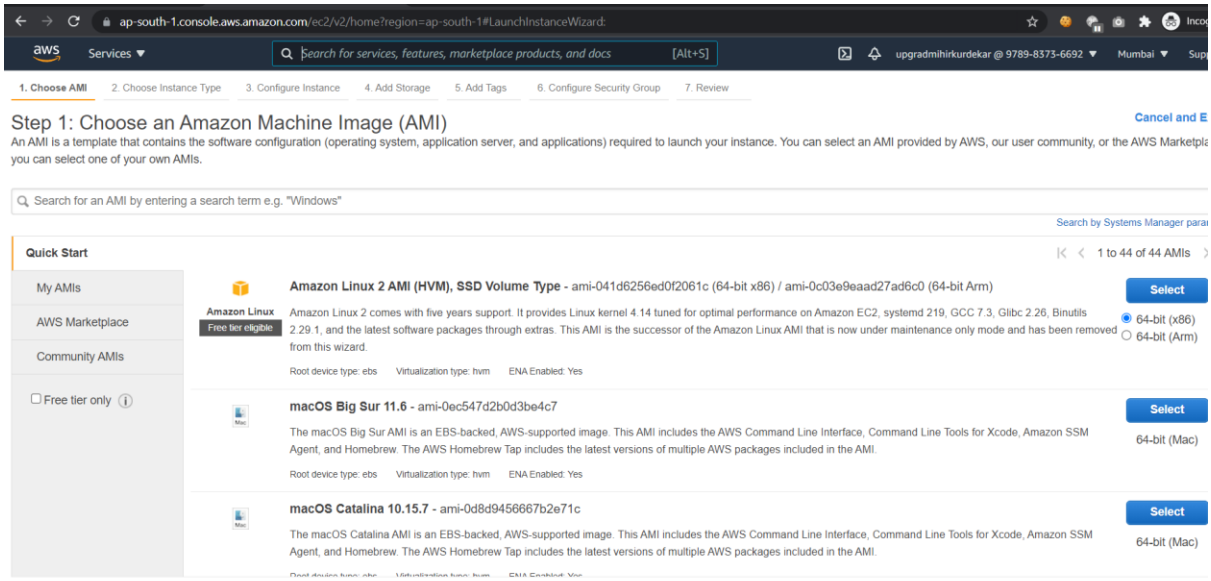
Create GitHub project



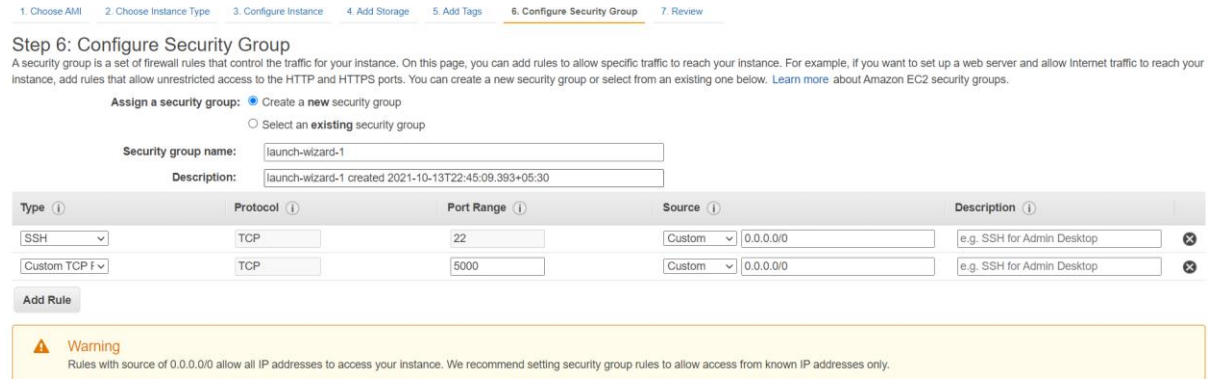
Docker deployment

Create EC2

Select amazon linux as AMI



Security group for EC2



Install git, docker and flask

sudo yum update

```
[ec2-user@ip-172-31-87-77 ~]$ sudo yum update
Loaded plugins: extras_suggestions, langpacks, priorities, update-motd
Resolving Dependencies
--> Running transaction check
---> Package amazon-linux-extras.noarch 0:2.0.0-1.amzn2 will be updated
---> Package amazon-linux-extras.noarch 0:2.0.1-1.amzn2 will be an update
---> Package amazon-linux-extras-yum-plugin.noarch 0:2.0.0-1.amzn2 will be updated
---> Package amazon-linux-extras-yum-plugin.noarch 0:2.0.1-1.amzn2 will be an update
---> Package dmidecode.x86_64 1:3.0-5.amzn2.0.2 will be updated
---> Package dmidecode.x86_64 1:3.2-5.amzn2.1 will be an update
---> Package glib2.x86_64 0:2.56.1-9.amzn2.0.1 will be updated
---> Package glib2.x86_64 0:2.56.1-9.amzn2.0.2 will be an update
---> Package glibc.x86_64 0:2.26-54.amzn2 will be updated
---> Package glibc.x86_64 0:2.26-55.amzn2 will be an update
---> Package glibc-all-langpacks.x86_64 0:2.26-54.amzn2 will be updated
---> Package glibc-all-langpacks.x86_64 0:2.26-55.amzn2 will be an update
---> Package glibc-common.x86_64 0:2.26-54.amzn2 will be updated
---> Package glibc-common.x86_64 0:2.26-55.amzn2 will be an update
---> Package glibc-locale-source.x86_64 0:2.26-54.amzn2 will be updated
---> Package glibc-locale-source.x86_64 0:2.26-55.amzn2 will be an update
---> Package glibc-minimal-langpack.x86_64 0:2.26-54.amzn2 will be updated
---> Package glibc-minimal-langpack.x86_64 0:2.26-55.amzn2 will be an update
---> Package grubby.x86_64 0:8.28-23.amzn2.0.2 will be updated
---> Package grubby.x86_64 0:8.28-23.amzn2.0.3 will be an update
---> Package kernel.x86_64 0:4.14.248-189.473.amzn2 will be installed
---> Package kernel-tools.x86_64 0:4.14.246-187.474.amzn2 will be updated
---> Package kernel-tools.x86_64 0:4.14.248-189.473.amzn2 will be an update
---> Package libcrypt.x86_64 0:2.26-54.amzn2 will be updated
---> Package libcrypt.x86_64 0:2.26-55.amzn2 will be an update
---> Package openssl.x86_64 1:1.0.2k-19.amzn2.0.7 will be updated
---> Package openssl.x86_64 1:1.0.2k-19.amzn2.0.8 will be an update
---> Package openssl-libs.x86_64 1:1.0.2k-19.amzn2.0.7 will be updated
---> Package openssl-libs.x86_64 1:1.0.2k-19.amzn2.0.8 will be an update
--> Finished Dependency Resolution

Dependencies Resolved
```

sudo yum install docker

```
[ec2-user@ip-172-31-87-77 ~]$ sudo yum install docker
Loaded plugins: extras_suggestions, langpacks, priorities, update-motd
Resolving Dependencies
--> Running transaction check
---> Package docker.x86_64 0:20.10.7-3.amzn2 will be installed
--> Processing Dependency: runc >= 1.0.0 for package: docker-20.10.7-3.amzn2.x86_64
--> Processing Dependency: libcgroup >= 0.40.rc1-5.15 for package: docker-20.10.7-3.amzn2.x86_64
--> Processing Dependency: containerd >= 1.3.2 for package: docker-20.10.7-3.amzn2.x86_64
--> Processing Dependency: pigz for package: docker-20.10.7-3.amzn2.x86_64
--> Running transaction check
---> Package containerd.x86_64 0:1.4.6-3.amzn2 will be installed
---> Package libcgroup.x86_64 0:0.41-21.amzn2 will be installed
---> Package pigz.x86_64 0:2.3.4-1.amzn2.0.1 will be installed
---> Package runc.x86_64 0:1.0.0-2.amzn2 will be installed
--> Finished Dependency Resolution

Dependencies Resolved

================================================================================
 Package                 Arch                    Version
================================================================================
Installing:
 docker                  x86_64                  20.10.7-3.amzn2
Installing for dependencies:
 containerd              x86_64                  1.4.6-3.amzn2
 libcgroup               x86_64                  0.41-21.amzn2
 pigz                    x86_64                  2.3.4-1.amzn2.0.1
 runc                    x86_64                  1.0.0-2.amzn2

Transaction Summary
================================================================================
Install  1 Package (+4 Dependent packages)

Total download size: 69 M
Installed size: 285 M
Is this ok [y/d/N]: y
Downloading packages:
(1/5): libcgroup-0.41-21.amzn2.x86_64.rpm
(2/5): pigz-2.3.4-1.amzn2.0.1.x86_64.rpm
(3/5): docker-20.10.7-3.amzn2.x86_64.rpm
(4/5): containerd-1.4.6-3.amzn2.x86_64.rpm
(5/5): runc-1.0.0-2.amzn2.x86_64.rpm
```

sudo yum install git

```
[ec2-user@ip-172-31-87-77 ~]$ sudo yum install git
Loaded plugins: extras_suggestions, langpacks, priorities, update-motd
Resolving Dependencies
--> Running transaction check
---> Package git.x86_64 0:2.32.0-1.amzn2.0.1 will be installed
--> Processing Dependency: perl-Git = 2.32.0-1.amzn2.0.1 for package: git-2.32.0-1.amzn2.0.1.x86_64
--> Processing Dependency: git-core-doc = 2.32.0-1.amzn2.0.1 for package: git-2.32.0-1.amzn2.0.1.x86_64
--> Processing Dependency: git-core = 2.32.0-1.amzn2.0.1 for package: git-2.32.0-1.amzn2.0.1.x86_64
--> Processing Dependency: emacs-filesystem >= 27.1 for package: git-2.32.0-1.amzn2.0.1.x86_64
--> Processing Dependency: perl(Term::ReadKey) for package: git-2.32.0-1.amzn2.0.1.x86_64
--> Processing Dependency: perl(Git::I18N) for package: git-2.32.0-1.amzn2.0.1.x86_64
--> Processing Dependency: perl(Git) for package: git-2.32.0-1.amzn2.0.1.x86_64
--> Running transaction check
---> Package emacs-filesystem.noarch 1:27.2-4.amzn2.0.1 will be installed
---> Package git-core.x86_64 0:2.32.0-1.amzn2.0.1 will be installed
---> Package git-core-doc.noarch 0:2.32.0-1.amzn2.0.1 will be installed
---> Package perl-Git.noarch 0:2.32.0-1.amzn2.0.1 will be installed
--> Processing Dependency: perl(Error) for package: perl-Git-2.32.0-1.amzn2.0.1.noarch
---> Package perl-TermReadKey.x86_64 0:2.30-20.amzn2.0.2 will be installed
--> Running transaction check
---> Package perl-Error.noarch 1:0.17020-2.amzn2 will be installed
--> Finished Dependency Resolution

Dependencies Resolved

================================================================================================================================
 Package                                    Arch                                    Version
================================================================================================================================
Installing:
 git                                        x86_64                                  2.32.0-1.amzn2.0.1
Installing for dependencies:
 emacs-filesystem                           noarch                                  1:27.2-4.amzn2.0.1
 git-core                                   x86_64                                  2.32.0-1.amzn2.0.1
 git-core-doc                               noarch                                  2.32.0-1.amzn2.0.1
 perl-Error                                 noarch                                  1:0.17020-2.amzn2
 perl-Git                                   noarch                                  2.32.0-1.amzn2.0.1
 perl-TermReadKey                           x86_64                                  2.30-20.amzn2.0.2

Transaction Summary
================================================================================================================================
Install  1 Package (+6 Dependent packages)

Total download size: 7.8 M
Installed size: 38 M
```

sudo yum install pip

ec2-user@ip-172-31-54-132:~

```
[ec2-user@ip-172-31-54-132 ~]$ sudo yum install pip
Loaded plugins: extras_suggestions, langpacks, priorities, update-motd
amzn2-core                                               | 3.7 kB     00:00
Resolving Dependencies
There are unfinished transactions remaining. You might consider running yum-comp
lete-transaction, or "yum-complete-transaction --cleanup-only" and "yum history
redo last", first to finish them. If those don't work you'll have to try removin
g/installing packages by hand (maybe package-cleanup can help).
--> Running transaction check
---> Package python2-pip.noarch 0:20.2.2-1.amzn2.0.3 will be installed
--> Finished Dependency Resolution

Dependencies Resolved

================================================================================
 Package           Arch         Version                 Repository        Size
================================================================================
Installing:
 python2-pip       noarch       20.2.2-1.amzn2.0.3      amzn2-core       2.0 M

Transaction Summary
================================================================================
Install  1 Package

Total download size: 2.0 M
Installed size: 9.5 M
Is this ok [y/d/N]: y
Downloading packages:
python2-pip-20.2.2-1.amzn2.0.3.noarch.rpm                  | 2.0 MB   00:00
Running transaction check
Running transaction test
Transaction test succeeded
Running transaction
  Installing : python2-pip-20.2.2-1.amzn2.0.3.noarch                       1/1
  Verifying  : python2-pip-20.2.2-1.amzn2.0.3.noarch                       1/1

Installed:
  python2-pip.noarch 0:20.2.2-1.amzn2.0.3

Complete!
```

sudo pip install flask

```
[ec2-user@ip-172-31-54-132 ~]$ sudo pip install flask
DEPRECATION: Python 2.7 reached the end of its life on January 1st, 2020. Please
 upgrade your Python as Python 2.7 is no longer maintained. pip 21.0 will drop s
upport for Python 2.7 in January 2021. More details about Python 2 support in pi
p can be found at https://pip.pypa.io/en/latest/development/release-process/#pyt
hon-2-support
WARNING: Running pip install with root privileges is generally not a good idea.
Try `pip install --user` instead.
Collecting flask
  Downloading Flask-1.1.4-py2.py3-none-any.whl (94 kB)
     |████████████████████████████████| 94 kB 6.9 MB/s
Collecting click<8.0,>=5.1
  Downloading click-7.1.2-py2.py3-none-any.whl (82 kB)
     |████████████████████████████████| 82 kB 2.7 MB/s
Collecting Jinja2<3.0,>=2.10.1
  Downloading Jinja2-2.11.3-py2.py3-none-any.whl (125 kB)
     |████████████████████████████████| 125 kB 84.7 MB/s
Collecting Werkzeug<2.0,>=0.15
  Downloading Werkzeug-1.0.1-py2.py3-none-any.whl (298 kB)
     |████████████████████████████████| 298 kB 73.7 MB/s
Collecting itsdangerous<2.0,>=0.24
  Downloading itsdangerous-1.1.0-py2.py3-none-any.whl (16 kB)
Collecting MarkupSafe>=0.23
  Downloading MarkupSafe-1.1.1-cp27-cp27mu-manylinux1_x86_64.whl (24 kB)
Installing collected packages: click, MarkupSafe, Jinja2, Werkzeug, itsdangerous
, flask
  Attempting uninstall: MarkupSafe
    Found existing installation: MarkupSafe 0.11
    Uninstalling MarkupSafe-0.11:
      Successfully uninstalled MarkupSafe-0.11
  Attempting uninstall: Jinja2
    Found existing installation: Jinja2 2.7.2
    Uninstalling Jinja2-2.7.2:
      Successfully uninstalled Jinja2-2.7.2
Successfully installed Jinja2-2.11.3 MarkupSafe-1.1.1 Werkzeug-1.0.1 click-7.1.2
 flask-1.1.4 itsdangerous-1.1.0
[ec2-user@ip-172-31-54-132 ~]$
```

Start docker

sudo service docker start

sudo usermod -a -G docker ec2-user

sudo reboot

```
[ec2-user@ip-172-31-87-77 campaigns-flask-serverless]$ sudo service docker start
Redirecting to /bin/systemctl start docker.service
[ec2-user@ip-172-31-87-77 campaigns-flask-serverless]$ sudo usermod -a -G docker ec2-user
[ec2-user@ip-172-31-87-77 campaigns-flask-serverless]$ docker ps
Got permission denied while trying to connect to the Docker daemon socket at unix:///var/run/docker.sock: Get "http://%2Fvar%2Fr
permission denied
[ec2-user@ip-172-31-87-77 campaigns-flask-serverless]$ sudo reboot
Connection to ec2-54-89-84-114.compute-1.amazonaws.com closed by remote host.
Connection to ec2-54-89-84-114.compute-1.amazonaws.com closed.
```

sudo service docker start

docker ps

```
[ec2-user@ip-172-31-87-77 ~]$ sudo service docker start
Redirecting to /bin/systemctl start docker.service
[ec2-user@ip-172-31-87-77 ~]$ docker ps
CONTAINER ID   IMAGE     COMMAND   CREATED   STATUS    PORTS     NAMES
[ec2-user@ip-172-31-87-77 ~]$
```

Get Source code into EC2

git clone https://github.com/mihirkurdekar/campaigns-flask-serverless.git

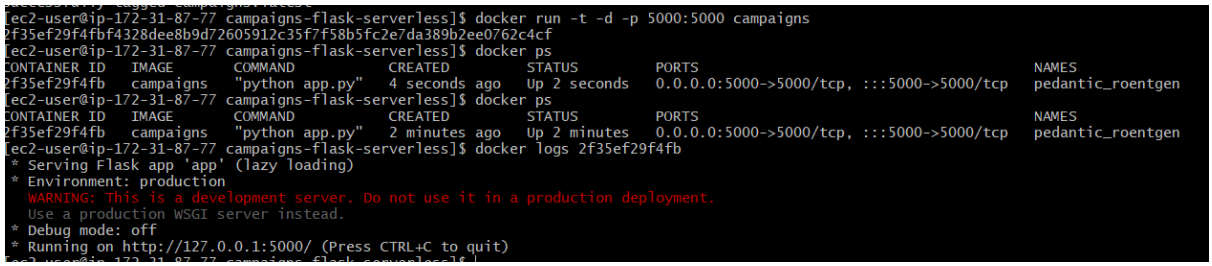
```
[ec2-user@ip-172-31-87-77 ~]$ git clone https://github.com/mihirkurdekar/campaigns-flask-serverless.gitAC
[ec2-user@ip-172-31-87-77 ~]$ ls
campaigns-flask-serverless
[ec2-user@ip-172-31-87-77 ~]$ cd campaigns-flask-serverless/
[ec2-user@ip-172-31-87-77 campaigns-flask-serverless]$ ls
app.py  Dockerfile  finalized_model_age.pkl  finalized_model_gender.pkl  package.json  package-lock.json  requirements.txt  serverless.yml  templates  Test_data.csv
[ec2-user@ip-172-31-87-77 campaigns-flask-serverless]$
```

Build and start docker

docker build -t campaigns .

```
[ec2-user@ip-172-31-87-77 campaigns-flask-serverless]$ docker build -t campaigns .
Sending build context to Docker daemon  5.299MB
Step 1/11 : FROM python:3.7-slim
 ---> 375e181c2688
Step 2/11 : WORKDIR /app/
 ---> Using cache
 ---> 1313a8e4bee2
Step 3/11 : COPY requirements.txt /app/
 ---> Using cache
 ---> ab4d8236e2d3
Step 4/11 : RUN pip install -r ./requirements.txt
 ---> Using cache
 ---> 712c0b0643ea
Step 5/11 : COPY app.py .
 ---> Using cache
 ---> df436d75e7ff
Step 6/11 : COPY *.pkl ./
 ---> aec4f202c7ee
Step 7/11 : COPY templates/*.html ./templates/
 ---> 32dd7f7140da
Step 8/11 : COPY Test_data.csv .
 ---> b5f3cc23acc1
Step 9/11 : ENTRYPOINT ["python"]
 ---> Running in c0d5821a3531
Removing intermediate container c0d5821a3531
 ---> a129cc08d8a7
Step 10/11 : CMD ["app.py"]
 ---> Running in 8d873d33e45c
Removing intermediate container 8d873d33e45c
 ---> d48f5bb5dbcb
Step 11/11 : EXPOSE 5000
 ---> Running in 9b8d99a59158
Removing intermediate container 9b8d99a59158
 ---> 9199e066cd55
Successfully built 9199e066cd55
Successfully tagged campaigns:latest
```

docker run -t -d -p 5000:5000 campaigns



Deployed App screen shots

Predictions

Home

campaign	device_id	description
4	-9003024964574030000	Bundled smartphone offers for the age group [0-24]
4	-8353633601469210000	Bundled smartphone offers for the age group [0-24]
4	-6897020094565110000	Bundled smartphone offers for the age group [0-24]
4	-5585718693005890000	Bundled smartphone offers for the age group [0-24]
4	-4262757933958110000	Bundled smartphone offers for the age group [0-24]
4	-6857195135381240	Bundled smartphone offers for the age group [0-24]
4	1717614301151560000	Bundled smartphone offers for the age group [0-24]
4	2519387054138400000	Bundled smartphone offers for the age group [0-24]
4	3038173071407360000	Bundled smartphone offers for the age group [0-24]
4	6228517405226570000	Bundled smartphone offers for the age group [0-24]
4	6435531434380250000	Bundled smartphone offers for the age group [0-24]
4	6436019780582010000	Bundled smartphone offers for the age group [0-24]
4	7393416743486660000	Bundled smartphone offers for the age group [0-24]
4	7626919836157560000	Bundled smartphone offers for the age group [0-24]
4	7850241797817570000	Bundled smartphone offers for the age group [0-24]
5	-9080896288558470000	Special offers for payment wallet offers [24-32]
5	-8562311995574260000	Special offers for payment wallet offers [24-32]
5	-7006138226710080000	Special offers for payment wallet offers [24-32]
5	-6761791831226090000	Special offers for payment wallet offers [24-32]
5	-5495451345551020000	Special offers for payment wallet offers [24-32]
5	-5067806326232410000	Special offers for payment wallet offers [24-32]
5	-4914699637760950000	Special offers for payment wallet offers [24-32]
5	-4317577182834580000	Special offers for payment wallet offers [24-32]
5	-1771246883976060000	Special offers for payment wallet offers [24-32]
5	-1299359798887540000	Special offers for payment wallet offers [24-32]
5	-1056379824269900000	Special offers for payment wallet offers [24-32]
5	-18294146237227900	Special offers for payment wallet offers [24-32]
5	1874308258075080000	Special offers for payment wallet offers [24-32]
5	1902768050899590000	Special offers for payment wallet offers [24-32]
5	3832459248646780000	Special offers for payment wallet offers [24-32]
5	3864672045456310000	Special offers for payment wallet offers [24-32]
5	5352829853797110000	Special offers for payment wallet offers [24-32]
5	6440604850918000000	Special offers for payment wallet offers [24-32]
5	7282162378550750000	Special offers for payment wallet offers [24-32]
5	8085592460854130000	Special offers for payment wallet offers [24-32]
6	-591037927679493000	Special cashback offers for Privilege Membership [32+]
6	1603956637484510000	Special cashback offers for Privilege Membership [32+]
6	2948104315232910000	Special cashback offers for Privilege Membership [32+]
6	4508069675663490000	Special cashback offers for Privilege Membership [32+]
6	5911316915301130000	Special cashback offers for Privilege Membership [32+]
6	6628613590050850000	Special cashback offers for Privilege Membership [32+]
6	7217910398487470000	Special cashback offers for Privilege Membership [32+]
6	8231243155939480000	Special cashback offers for Privilege Membership [32+]
6	8256066307270200000	Special cashback offers for Privilege Membership [32+]
6	8642523170587800000	Special cashback offers for Privilege Membership [32+]

Path: /gender on click of gender

Predictions

Home

campaign	device_id	Description
1	-8810677098572110000	Specific personalised fashion-related campaigns targeting female customers
1	-8562311995574260000	Specific personalised fashion-related campaigns targeting female customers
1	-7006138226710080000	Specific personalised fashion-related campaigns targeting female customers
1	-4317577182834580000	Specific personalised fashion-related campaigns targeting female customers
1	-3775758989316750000	Specific personalised fashion-related campaigns targeting female customers
1	-3365155781191060000	Specific personalised fashion-related campaigns targeting female customers
1	-1833888400593950000	Specific personalised fashion-related campaigns targeting female customers
1	-237840407705312000	Specific personalised fashion-related campaigns targeting female customers
1	1556063603403040000	Specific personalised fashion-related campaigns targeting female customers
1	1793973678492670000	Specific personalised fashion-related campaigns targeting female customers
1	1874308258075080000	Specific personalised fashion-related campaigns targeting female customers
1	3864672045456310000	Specific personalised fashion-related campaigns targeting female customers
1	4508069675663490000	Specific personalised fashion-related campaigns targeting female customers
1	6628613590050850000	Specific personalised fashion-related campaigns targeting female customers
1	7247668499837840000	Specific personalised fashion-related campaigns targeting female customers
2	-9080896288558470000	Specific cashback offers on special days (International Women's Day etc) targeting female customers
2	-8165252275151050000	Specific cashback offers on special days (International Women's Day etc) targeting female customers
2	-5949440942329240000	Specific cashback offers on special days (International Women's Day etc) targeting female customers
2	-5495451345551020000	Specific cashback offers on special days (International Women's Day etc) targeting female customers
2	-5041451728203970000	Specific cashback offers on special days (International Women's Day etc) targeting female customers
2	-4457934313456070000	Specific cashback offers on special days (International Women's Day etc) targeting female customers
2	-4013651731994810000	Specific cashback offers on special days (International Women's Day etc) targeting female customers
2	-2901224534649370000	Specific cashback offers on special days (International Women's Day etc) targeting female customers
2	-873624726654422000	Specific cashback offers on special days (International Women's Day etc) targeting female customers
2	-374345410936460000	Specific cashback offers on special days (International Women's Day etc) targeting female customers
2	-213353779945617000	Specific cashback offers on special days (International Women's Day etc) targeting female customers
2	1892006536093720000	Specific cashback offers on special days (International Women's Day etc) targeting female customers
2	2284311608510200000	Specific cashback offers on special days (International Women's Day etc) targeting female customers
2	4246704990765040000	Specific cashback offers on special days (International Women's Day etc) targeting female customers
2	5237798119228100000	Specific cashback offers on special days (International Women's Day etc) targeting female customers
2	5899050094160970000	Specific cashback offers on special days (International Women's Day etc) targeting female customers
2	6044154447492110000	Specific cashback offers on special days (International Women's Day etc) targeting female customers
2	6440604850918000000	Specific cashback offers on special days (International Women's Day etc) targeting female customers
2	6917204221135840000	Specific cashback offers on special days (International Women's Day etc) targeting female customers
2	8488817413061090000	Specific cashback offers on special days (International Women's Day etc) targeting female customers
3	-5615710754997930000	Personalised call and data packs targeting male customers
3	-727204878593826000	Personalised call and data packs targeting male customers
3	-591037927679493000	Personalised call and data packs targeting male customers
3	2948104315232910000	Personalised call and data packs targeting male customers
3	5911316915301130000	Personalised call and data packs targeting male customers
3	7217910398487470000	Personalised call and data packs targeting male customers
3	7850241797817570000	Personalised call and data packs targeting male customers
3	8231243155939480000	Personalised call and data packs targeting male customers
3	8256066307270200000	Personalised call and data packs targeting male customers
3	8642523170587800000	Personalised call and data packs targeting male customers