

†dbx KwǫúDUvi BÝwUwUDU,

†dbx

# RekxU

wel†qi bvg- †cÖvMÖvws G†mbwUkvqj

welq †KvW- 66631, cÖweavb- 2016

e`envwiK K¬vm- 3 †μwWU(3 w cwiqW  
j`ve K¬vm)

†UK†bvjwR- wmGmwU, wWGbWU (3q  
ce©), wUwmwU(4\_© ce©)

cÖ`ZKvix-

†gvt Avãym †Qvenvb kvngxg

BÝU<sup>a</sup>v±i, wmGmwU

†dbx KwǫúDUvi BÝwUwUDU

# e`envwiK As†ki wm†jevmt

**Perform skill to create, compile, debug & execute programs to solve specific problems.**

**1. Simple programs using basic structure of a programming Language (Python).**

- 1.1. A program for printing a message.
- 1.2. A program for adding two integer numbers.

**2. Simple programs using variables**

- 2.1. A program to calculate the average of a set of N numbers.
- 2.2. A program to convert the given temperature in Fahrenheit to Celsius and vice versa.
- 2.3. A program to calculate the area of a circle.
- 2.4. Write similar programs using variables.

**3. programs using operators**

- 3.1. A program to convert days to months and days.
- 3.2. A program to calculate the area of a triangle.
- 3.3.** A program to compare two integer numbers.
- 3.4. Write similar programs using operators.

**4. Programs using Branching Statements.**

- 4.1. A program to select and print the largest of the three numbers.
- 4.2. A program to compute the roots of a quadratic equation.
- 4.3. Write similar programs using Branching Statements.

**5. Programs using Looping Statements**

- 5.1. A program to print odd or even numbers from 1 to 100.
- 5.2. A program to find the maximum or minimum number from a set of numbers
- 5.3. A program for searching prime numbers.
- 5.4. Write similar programs using Loop Statements.

**6. Programs using Lists.**

- 6.1. A program to sort numbers in ascending or descending order using onedimensional array.
- 6.2. A program to print numbers in two dimensional forms.
- 6.3. Write similar programs using Lists.

**7. Programs using functions.**

- 7.1. A program to calculate the area of a triangle using function.
- 7.2. A program that uses a function to sort an array of integers.
- 7.3. A program to calculate factorial of any integer using recursive function.
- 7.4. Write similar programs using functions.

**8. Programs using files.**

- 8.1. A program to store information to or to read information from file.
- 8.2. Write similar programs using files.

# e`envwi†Ki c~†e©i K\_vt

cvB\_b GKwU WvBbvvgK †cÖvM«vwgs Ges eZ©gv†b RbwcÖq  
j`vs,†qR| †hwU eû †cÖvMÖvgvi Ges †W†fjcv†i gb Rq K†i†Q| ,Mj,  
W«ce., BÝUvM«vg, gwRjv mn A†bK eo eo cÖwZôv†bi nvRv†iv †W†fjcv  
Ges †cÖvMÖvgvi cvB\_b w`†q mdUIq`vi †W†fjc K†i| cvB\_b Ggb GKwU  
fvlv hvi MVb %okjx Abb` Ges cÖKvkfw½ AmvaviY| PgrKvi GB  
j`vs,†qRwU ZvB AvR Qwo†q c†o†Q bvbv w`†K e`enZ n†”Q wewfbœ  
d`vUd†g© †hgb - I†qe, †W`«Uc, †gvevBj, wm†÷g G`vWwgwb†÷«kb Ges  
mvBw»UwdK KwœúDwUs wKsev †gwkb jvwb©s - meÎ©B cvB\_†bi `...β  
c`PviYv|

Avil wbw`©ó K†i ej†Z †M†j - Django, Flask, Tornado BZ`vw` †d«gIqvK©  
Gi gva`†g I†qe A`vvcø†Kkb †W†fjc†g»U Ki†Z PvB†j cvB\_b Rvbv Aek`B  
,iæZjc~Y©| Avevi †W`«Uc ev M«vwdK`vj BDRvi B»Uvi†dBm mg...×  
mdUIq`vi †W†fjc†g†Ui Rb` cvB\_b †cÖvM«vwgs Gi Ávb†K e`envi Kiv  
hv†e PyQT Gi gZ UyjwKU ev Tkinter Gi gZ c`v†KR Gi mv†\_| Avil Av†Q  
Kivy Gi gZ jvB†e«ix|eZ©gv†b eûj Av†jvWPZ Ges fwel`†Zi cÖhyw³i wfwË  
WvUv mv†qÝ Ges †gwkb jvwb©s, m†e©vcwi AvwU©wdwkqvj  
B†»Uwj†RÝ wb†q KvR Ki†Z PvB†j cvB\_b n†Z cv†i wbwØ©avq cÖ\_g  
cQ†»i cø`vUdg©| KviY, scikit-learn Gi gZ †gwkb jvwb©s jvB†e«ix,  
Pandas Gi gZ WvUv †d«g jvB†e«ix, Numpy Gi gZ K`vjKy†jkb jvB†e«ix  
†h,†jv GK K\_vq Abb`- GmeB Av†Q cvB\_†bi Rb`|

wmwiqvm †jvKRb B»Uvi†bU Ad w\_sm wb†q KvR Ki†Z PvB†j| iv`ú†ewi-  
cvB, ev GiKg nvW©Iq`vi cø`vUdg© ,†jvi mv†\_ cvB\_†bi Kwœ^†bkb n†Z  
cv†i PgrKvi| Av†Q RPi.GPIO. Avi gRvi †jvKR†bi †Mg †W†fjc†g»U Gi  
Rb` Av†Q PyGame.

GiKg Avil AmsL` cø`vUd†g© cvB\_†bi `...β c`PviYv †e†oB P†j†Q Avi  
ZvB evsjv†`†ki †W†fjcv†i g†a` GB fvlvwU Qwo†q w`†Z KwwiMwi  
†evW© Z\_v Avgv†`i GB ¶y`a cÖqvm|

Avil we`ÍvwiZ Rvbvi Rb` evsjv†`kx cvB\_b BDRvi M^ayc|  
evsjv†`kx cvB\_b †W†fjcv†i wjib†K)`« GB †dBmeyK M^aycwU | GwU  
evsjv†`†ki me†P†q eo cvB\_b BDRvi M^ayc | GB M^ay†ci m`m`iv evsjv†`†k  
cvB\_b cÖmv†i cÖwZwbqZ Ae`vb †i†L P†j†Qb |

cvB\_b evsjv†`†ki Rb¥ nq †dBmey†Ki evB†i | Avil we`ÍvwiZ Rvbvi Rb`  
g~j I†qemvB†Ui mv†\_ †dBmeyK M^aycwUi bvg wb†q hv†Z KbwdDkb

%Zwi bv nq ZvB †dBmeyK M<sup>a</sup>ycwUi bvg cieZ©xKv‡j cwieZ©b K‡i ivLv  
nq - "cvBPvg©vm©" | eZ©gv‡b M<sup>a</sup>ycwUi bvg "Python Bangladesh" Ges  
Awdwmqvj I‡qe mvB‡Ui wVKvbv: <http://pybd.org> ‡dmeyK BD.Avi.Gj:  
<https://www.facebook.com/groups/pythonbd/photos/>

## cvB\_b BÝU‡jkb cÖwÎqv-

cvB\_b BÝU<sup>a</sup>‡jkb‡bi †ÿ‡Î Avcwb hw` wj bv· ev g`vK e`enviKvix nb  
Z‡e Avcbvi Kw<sup>ó</sup>DUv‡i cvB\_b †`IqvB \_v‡K| RyjvB 2016 mvj ch©ŠÍ GB  
†gRi `ywU Acv‡iwUs wm‡÷‡gi mv‡\_ †h cvB\_b weë Bb Ae<sup>-</sup>'vq wWdë  
wn‡m‡e \_v‡K Zvi fvm©b n‡”Q Python 2.7.x. wKš‘, GB †Kvm©wU †jLv  
n‡”Q Python 3.5.x Gi Dci wfwË K‡i| Avm‡j cvB\_b 2 Ges 3 fvm©‡bi g‡a`  
wmbU`v· Ges wdPvi m<sup>ó</sup>wK©Z †ek wKQy gvSvwi gv‡bi cwieZ©b Av‡Q|  
cvB\_‡bi Awdwmqvj mvB‡U eZ©gv‡b cvB\_b 3 †KB †ewk †dvKvm Kiv  
n‡q \_v‡K Ges Zviv `úóB e‡j w`‡q‡Q †h cvB\_‡bi eZ©gvb Ges fwel`r n‡”Q  
cvB\_b 3|

Python 2.x is legacy, Python 3.x is the present and future of the  
language

## BÝU‡jkb

Avgiv wb‡P wKQy †gRi Acv‡iwUs wm‡÷‡g cvB\_b 3 Gi †j‡U÷  
fvm©b BÝU‡jkb‡bi avc ,‡jv m<sup>ó</sup>^‡Û Rvb‡ev| Av‡MB ejv n‡q‡Q, wj bv· ev  
g`v‡K cvB\_‡bi 2 fvm©b weë-Bb Ae<sup>-</sup>'vq \_v‡K| ZvB mivmwi GB cvB\_‡bi  
B>Uvi‡cÖUvi‡K Pvjy Ki‡Z n‡j Uvwg©bvj I‡cb K‡i KgvÛ wjL‡Z n‡e,

## python

Ges G>Uvi Pvc‡jB cvB\_b 2 Gi B>Uvi‡cÖUvi Pvjy n‡e| wKš‘ Avgiv  
GB fvm©b wb‡q †h‡nZy KvR Ki‡ev bv ZvB wb‡Pi †j‡U÷ fvm©b  
BÝU‡jkb‡bi w`‡K g‡bv‡hvM †`B|

## DB‡ÛvR Acv‡iwUs wm‡÷‡g G cvB\_b BÝU‡jkb

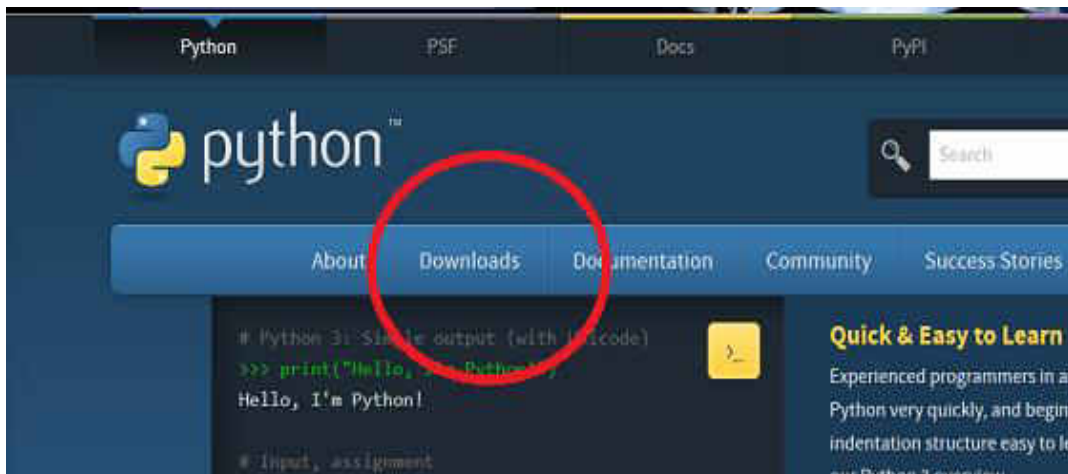
cvB\_b †kLvi Rb` mevi cÖ\_‡g cvB\_b mdUIq`vi WvDb‡jvW Ki‡Z  
n‡e 'www.python.org'  
‡\_‡K| Bnv n‡”Q cvB\_‡bi Awdwmqvj I‡qe mvBU|

„Mj e«vDRvi G wM†q 'python.org' wj†L mvP© w`†j mevi cÖ\_†gB  
'python.org' P†j Avm†e|



„Mj e<sup>a</sup>vDRvi

GLvb †\_†K mivmwi cvB\_†bi I†qemvB†U P†j hvIqv hv†e|  
†gbyevi †\_†K WvDb†jvW Ack†b wK¬K Ki†j mivmwi WvDb†jvW  
†cBR P†j Avm†e |



cvB\_b I†qemvBU

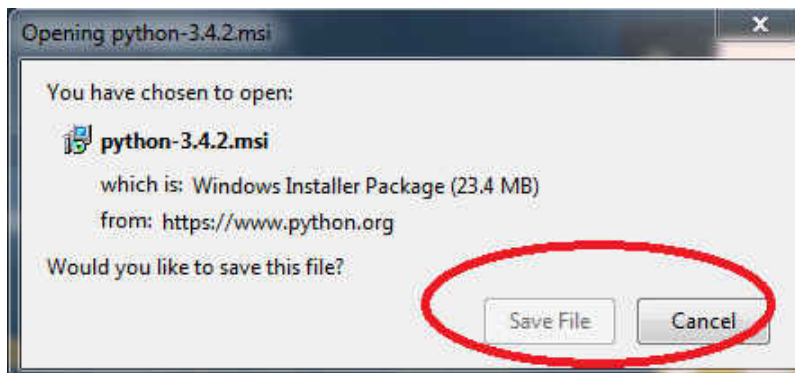
GwU WvDb†jvW †cBR|  
†hLv†b Download the latest version for Windows

cÖ¬ZKvix- †gvt Avāym †Qvenvb kvngx, BÝU<sup>a</sup>v±i, †dbx KwαúDUvi BÝwUwUDU



WvDb†jvW †cBR  
GLvb †\_†K cvB\_b 3.4 WvDb†jvW Ki†Z n†e| PvB†j cvB\_b 2.7  
ev `ywUB WvDb†jvW Kiv hvq| †KD wjv· ev g·vK  
Acv†iwUs wm†÷g e·envi K†i \_vK†j †mB fvm©†bi cvB\_b  
WvDb†jvW Ki†Z n†e| njy` i†Oi " Download Python 3.4.3" e†·  
wK¬K Ki†Z n†e|

WvDb†jvW dvBj P†j Avm†e|

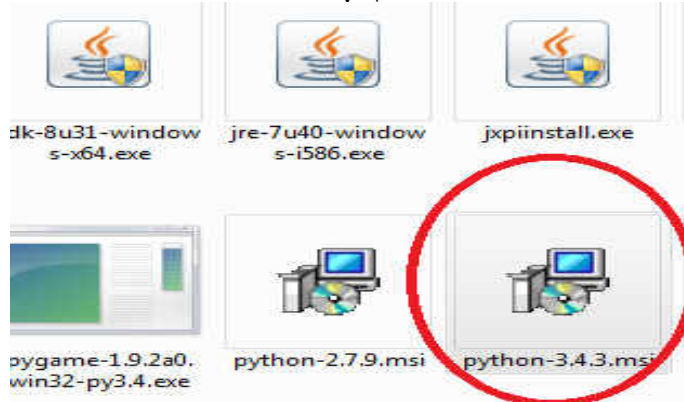


WvDb†jvW mdUIq·vi

mf evUfb wK-K Kfi cvB\_b WvDbfjvW KifZ nfe

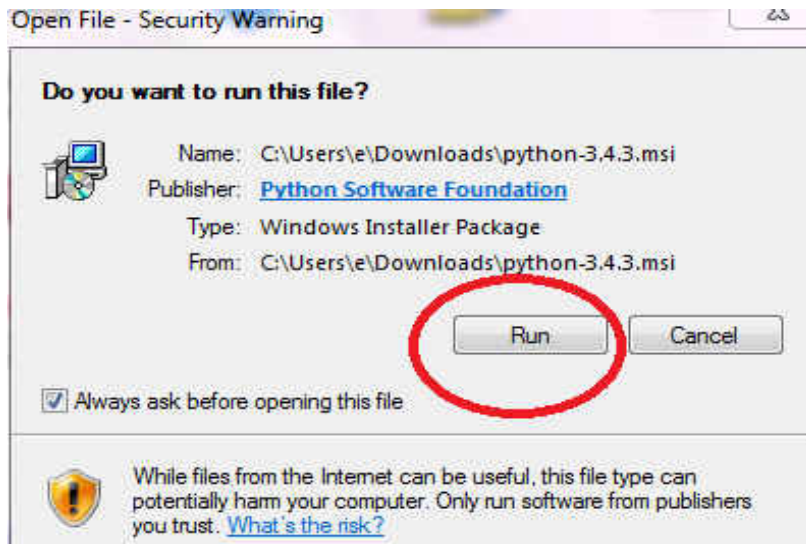
(Kvb Kvb e«vDRvfi fmf Ackb bvl\_vKfZ cvfi| mivmwi WvDbfjvW nfq hvfe)|

KwouDUvfi WvDbfjvW fdvivi f\_fK cvB\_bf 'msi' mdUIq`vi LyuR fei KifZ nfe|

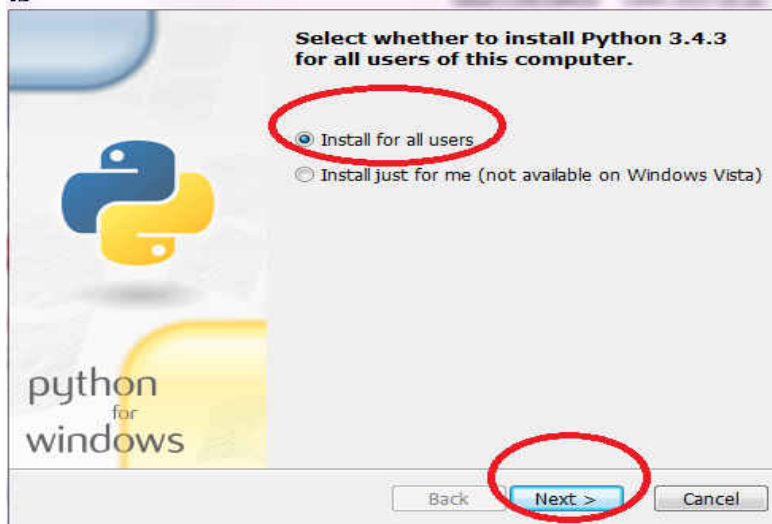


KwouDUvfi WvDbfjvW fdvivi

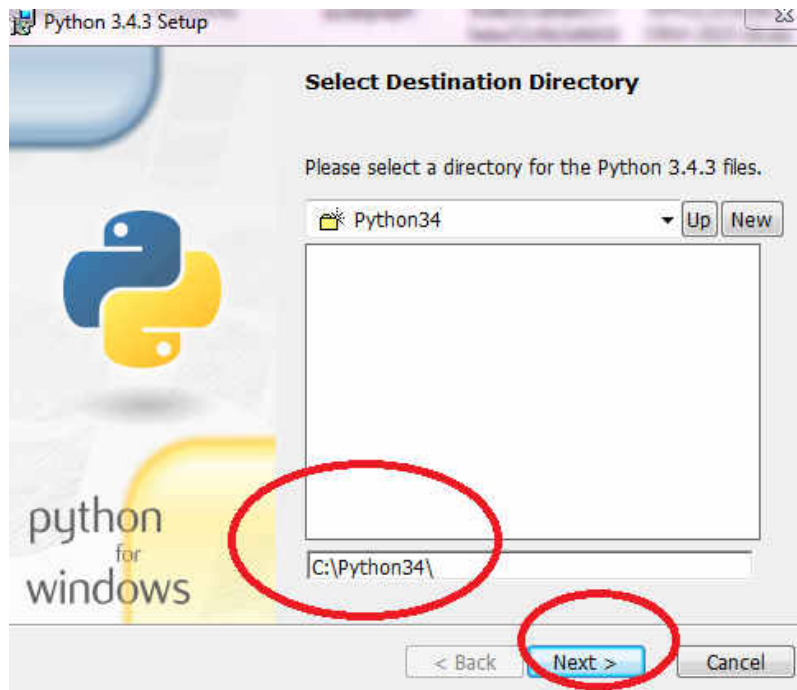
python-3.4.3.msi mdUIq`vfi Wvej wK-K Kifj cvB\_b ivb KifZ PvB wKbv RvbZ fPfq GKwU cc-Avc e· Avmfe|



ivfb wK-K Kifj BYUj cOwµqv iia nfe|



"Install for all users" wbe©vPb Ki‡Z n‡e| Zvici "Next" wK¬K Kwi |

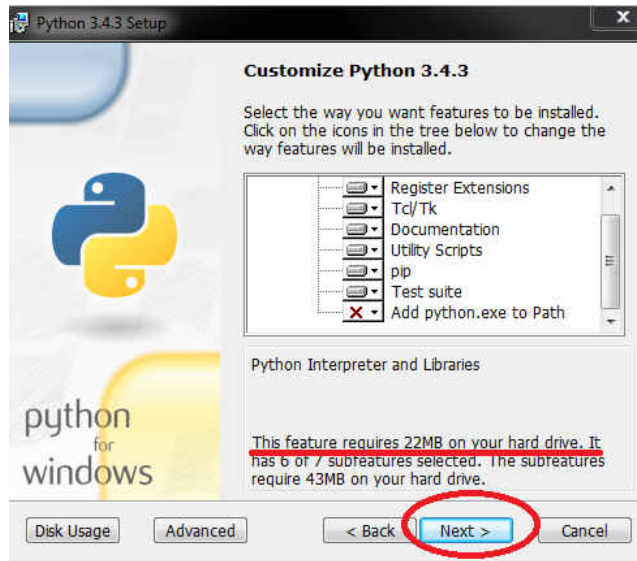


PvB‡j wW‡i±wi cwieZ©b Kiv hvq| Z‡e hv Av‡Q Zv ivLvB fvj,  
wWdi †jv‡Kkb wm W«vB‡f|

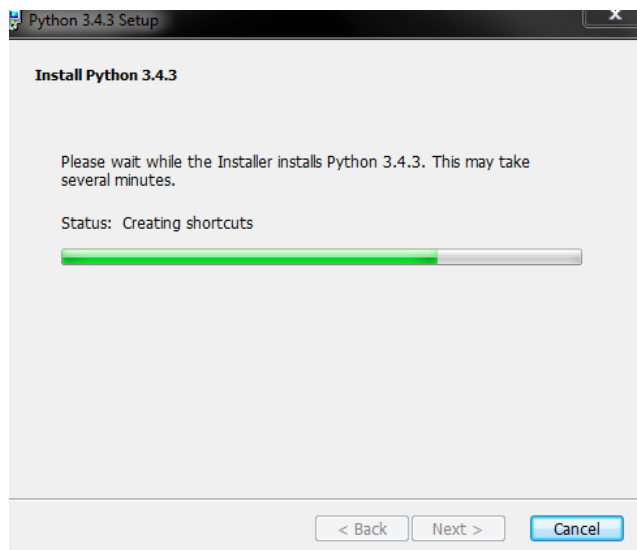
Avevi "Next" G wK¬K Ki‡Z n‡e |

cÖ¯ZKvix- †gvt Avāym †Qvenvb kvngx, BÝUªv±i, †dbx Kw᠒úDUvi BÝwUwUDU





‡Kvb wdPvi cwieZ©b ev AšÍf©y³ Ki‡Z PvB wKbv  
 Rvb‡Z PvB‡e| hv Av‡Q ZvB ivL‡Z cvwi| Avevi "Next"  
 wK¬K Ki‡Z n‡e |

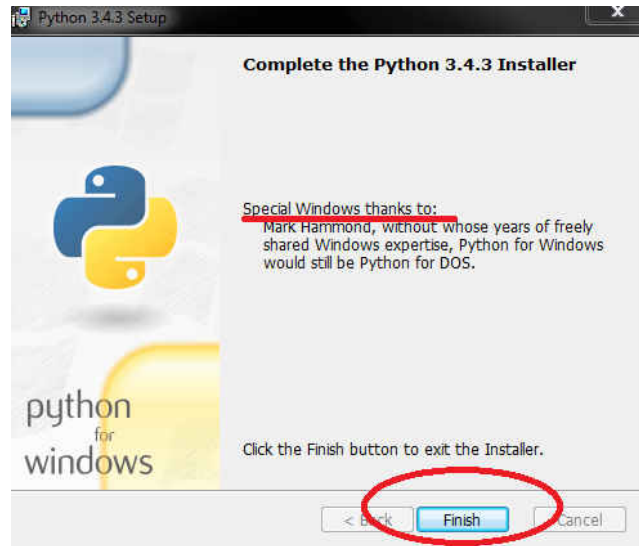


cvB\_b BÝUj nIqv iiæ n‡e|

BÝU‡jk‡bi mgq nqZ †Kvb cc- Avc e· Avm‡Z cv‡i  
 DB‡ÚvR †\_‡K | †m‡¶|‡Î "Yes" n‡e| KviY †m Rvb‡Z  
 PvB‡e Avwg GB ‡cÖvMÖvg‡K KwᳵDUv‡i cᳵek Kivi

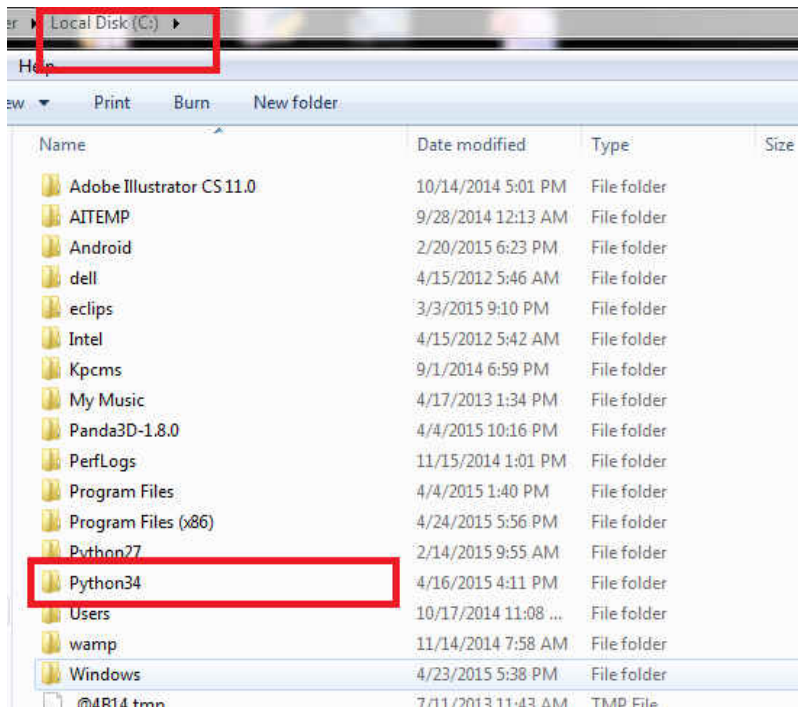
cÖ¬ZKvix- †gvt Avāym †Qvenvb kvngx, BÝUᳵv±i, †dbx KwᳵDUvi BÝwUwUDU

ev BÝUþjkþbi AbygwZ w`w`Q wKbv|



BÝUj mðúbæ nþq þMþj "Complete" þjLv e· Avmþe|  
"Finish" evUþb wK-K Kþi BÝUþjkb cÖwµqv þkl  
KiþZ nþe|

'Windows' Gi 'Start' þ\_þK 'Computer' Ges  
'Computer' þ\_þK 'Local Disk(C)' þZ þMþj þ`Lv hvþe  
cvB\_þbi þdvivi %oZwi nþq þMþQ|



cvB\_†bi RM†Z ^vMZg !!!

```
>>> print('Hello world!')
```

Zvn†j Zvic†ii jvB†bB AvDUcyU cv†eb wb†Pi gZ,

Hello world!

wjbn· (Dey>Uy)

Dey>Uyi †j†U÷ fvm©†b Python 3 †KI BÝUj Ae¯vq †`Lv hvq (†hgb Python 3.4.2) wKš‘ wWdē wn†m†e †mU Kiv \_v†K bv| A\_©vr, GB fvm©†bi B>Uvi†cÖUvi Pvjy Ki†Z Uvwg©bv†j wjL†Z n†Z cv†i python3 Ges G>Uvi Pvc†Z n†e|

`ywU cvB\_†bi Avjv`v Avjv`v evBbvwi Avjv`v bv†g †mBf \_v†K Ges G†i cv\_I †`Lv †h†Z cv†i| Uvwg©bv†j h\_vμ†g which python Ges which python3 KgvÛ Bm`y Ki†j h\_vμ†g /usr/bin/python Ges

cÖ¯ZKvix- †gvt Avāym †Qvenvb kvxg, BÝU^v±i, †dbx KwαúDUvi BÝwUwUDU

```
/usr/local/bin/python3 †`Lv hv†e| A_©vr wWdë cvB_b Ges cvB_b 3.4 Gi  
cv_ Avjv`v|
```

```
hvB †nvK, Avgiv hw` AviI †j†U÷ fvm©bwU†K BÝUj Ki†Z PvB  
Zvn†j mivmwi GB wj¼ †_†K cvB_b 3.5.2 Gi Gzipped source tarball  
WvDb†jvW K†i †mwU†K Extract K†i wb†Z n†e| G†Z K†i KwóúDUv†i  
Python-3.5.2 bv†gi GKwU †dvivi %oZwi n†e|
```

```
Gevi, Uvwg©bvj I†cb K†i cd KgvÛ e`envi K†i IB †dviv†ii †jv†Kk†b  
†h†Z n†e| †hgb,
```

```
$ cd ~/Downloads/Python-3.5.2
```

```
Gici wb†Pi KgvÛwU w`†Z n†e,
```

```
./configure
```

```
GLb wb†Pi KgvÛwU w`b,
```

```
make
```

```
Gici,
```

```
sudo make install
```

```
me wKQy fv†jvq fv†jvq n†q †M†j Uvwg©bvj I†cb K†i KgvÛ w`b,
```

```
python3.5
```

```
wb†Pi gZ AvDUcyU Avm†e,
```

```
Python 3.5.2 (default, Jul 22 2016, 18:23:14)
```

```
[GCC 4.8.2] on linux
```

```
Type "help", "copyright", "credits" or "license" for more information.
```

```
>>>
```

```
A_©vr Python 3.5.2 Gi Kb†mvj ev REPL Pvjy n†q †M†Q :)
```

```
GB bZyb cvB_†bi †jv†Kkb Rvb†Z which python3.5 KgvÛ w`†q
†`L†Z cv†ib hvi AvDUcyU Avm†Z cv†i /usr/local/bin/python3.5
```

```
g`vK IGmG.
```

```
wjv†·i gZ g`v†KI cvB_b 2 weë Bb Ae`vq _v†K| cvB_†bi †j†U÷
fvm©bwUi .pkg dig`vU WvDb†jvW Ki†Z n†e GLv†b †_†K.
```

```
Gici WvDb†jvW Kiv dvB†j Wvej wK-K K†i Ges w`†b AvMZ Z_
,†jv †`†L †`†L Lye mn†RB M«vwdK`vj gy†W cvB_b BÝUj Kiv hvq|
```

```
BÝU†jkb KgwçU n†j bZyb cvB_†bi cv_ †K wm†÷†gi PATH
Gbfvqib†g>U f`vwi†qe†j hy³ K†i wb†Z n†e| G Rb` Avcbvi e`eüZ †kj
†cÖvM«v†gi Dci wfwË K†i ~/.profile, .zshrc, A_ev /.bash_profile
dvBj†K GwWU K†i wb†Pi jvBbwU Ry†o w`b|
```

```
export
```

```
PATH=$PATH:/Library/Frameworks/Python.framework/Versions/3.5/bin/p
ython3
```

```
GLb bZyb GKwU Uvwg©bvj DB†Ûv I†cb K†i KgvÛ w`b,
```

```
python3
```

```
wb†Pi gZ AvDUcyU Z_v REPL Pvjy n†j a†i †bqv hvq cvB_†bi
†j†U÷ fvm©b BÝUj n†q†Q,
```

```
Python 3.5.1 (v3.5.1:37a07cee5969, Dec 5 2015, 21:12:44)
```

```
[GCC 4.2.1 (Apple Inc. build 5666) (dot 3)] on darwin
```

```
Type "help", "copyright", "credits" or "license" for more information.
```

```
>>>
```

```
g`v†K cvB_b BÝUj Kivi mv†_ mv†_ GKwU IDLE (Integrated
Development Learning Environment) -I BÝUj n†q hvq †hUv Avm†j
Uvwg©bv†ji cvB_b REPL (read-eval-print loop) Gi gZB KvR K†i
wKš` we†klfv†e cvB_b †cÖvM«vwgs Gi Rb`B %oZwi| A`vc wj÷
†_†K GB bZyb BÝUj nIqv REPL †K Lyu†R Pvjy Kiv hv†e|
```

```
mveavbZv
```

```
cÖ`ZKvix- †gvt Avāym †Qvenvb kvngx, BÝU`v±i, †dbx KwαúDUvi BÝwUwUDU
```

hñZy wj bv · I g v K cvB\_b 2 Gi evBbvwi weë-Bb v K Ges Avjv`vfv e BÝUj Kiv cvB\_b Gi evBbvwi bvg mvaviYZ python3.4 ev python3.5 n q v K; †Zv A b KB bZyb BÝUj Kiv cvB\_b evBbvwi bvg e` j ev wm ^vwjK wj¼ %oZwi K i python K i v K b hv Z K i Uvbwg©bv j python K gv Gw·wKDU Ki j B cvB\_b 3 Gi B>Uvi cÖUvi Pvjy nq| GB KvRwU Kiv GK`g DwPr bv| KviY wj bv · ev g v K wKQy Uyjm Ges †cÖvM«vg v K †h, jv IB wm ÷ gi cvB\_b Gi Dc i B wbf©i K i | GLb hLb Avcw b cvB\_b 3 Gi bvg e` j iay cvB\_b K i w` eb, Zvici †\_ K IB wm ÷ g †cÖvM«vg , jv nq Zv mwVK fv e KvR Ki e bv| Kvib Zviv cvB\_b 2 Gi B>Uvi cÖUvi †K wP b cvB\_b bv g|

cvB\_b †cÖvMÖv gi ÷<sup>a</sup>vKPvi (Describe the Structure of Python Program) t

cvB\_b GKwU nvB- † j f j † c«vM«vwgs j`vs, qR| GB fvlvq †c«vM«vg wjLv n j KwóDUvi Zv eyS Z cv i bv| KviY KwóDUvi KvR K i † gwkb fvlvq| GB mgm`v mgvav bi Rb` GKwU wbw`©ó Abyev`K (translator) mdUIq`vi e`envi Ki Z nq, hv wKbv cvB\_b bi fvlv K (nvB- † j f j † c«vM«vwgs j`vs, qR K) † gwkb fvlvq cwiewZ©Z K i, hv Z Zv KwóDUvi eyS Z cv i | Avi cvB\_b bi Rb` GB KvRwU K i cvB\_b B>Uviwc«Uvi(Interpreter), hv GKwU mdUIq`vi|

GB B>Uviwc«Uvi K ejv nq 'IDLE' hvi c~Yi«~c nj 'Integrated DeveLopment Environment'| cvB\_b IDLE Avjv`v K i WvDb jvW Ki Z nq bv| GwU cvB\_b c`v K Ri mv\_ mshy<sup>3</sup> v K| Ab`vb` †c«vM«vwgs j`vs, qR †hgbt Rvfv, wm ev wm++ e`envi Kivi Rb` wKš` Avjv`v K i IDE WvDb jvW K i wb Z nq †hgbt CodeBlocks, Eclipse, NetBeans BZ`vw`|

g b ivL Z n e cvB\_b bi † i B>Uviwc«Uvi K ejv nq 'IDLE' wKš` Ab`vb` †c«vM«vwgs j`vs, q R i † i B>Uviwc«Uvi K ejv nq IDE (Integrated Development Environment)|

e`env i Dci wfw E K i cvB\_b 'IDLE' †K `yBfv M fvM Kiv nqt

1. IDLE Shell ev Interactive Mode
2. IDLE Editor ev Script Mode

(cvB\_b GB `yBwU 'IDLE' wb qB KvR Ki Z n e| ZvB G` i bvg , iæ Z i mv\_ g b ivL Z n e)

1. IDLE Shell ev Interactive Mode:

cvB\_b †c«vM«vg wjLvi me†P†q mnR gva`g nj IDLE Shell ev  
 Interactive Mode | cvB\_†b `ayZ †KvW wjL†Z I evM ev fyj Lyu†R †ei  
 Ki†Z PgrKvi fv†e KvR K†i IDLE Shell| IDLE Shell G A†bK †ekx  
 †c«vM«vg wjLv hvq bv Z†e †c«vM«vg PP©vi †¶†† GwU GKwU fvj  
 gva`g | KviY GwU %oZwiB Kiv n†q†Q bZyb†`i K\_v wPšÍv K†i hv†Z  
 Zviv mn†R †c«vM«vwgs wkL†Z cv†i|

IDLE Shell ev Interactive Mode Gi wKQy %oewkó` Av†Q|  
 †hgbt

\* IDLE Shell G †Kvb †c«vM«vg wjLv n†j Zvi djvdj / AvDUcyU /  
 wiUvb© †c†Z n†j ev †c«vM«vg†K Gw·wkDU Ki†Z n†j  
 Kx†ev†W©i Enter evUb Pvc†Z n†e|

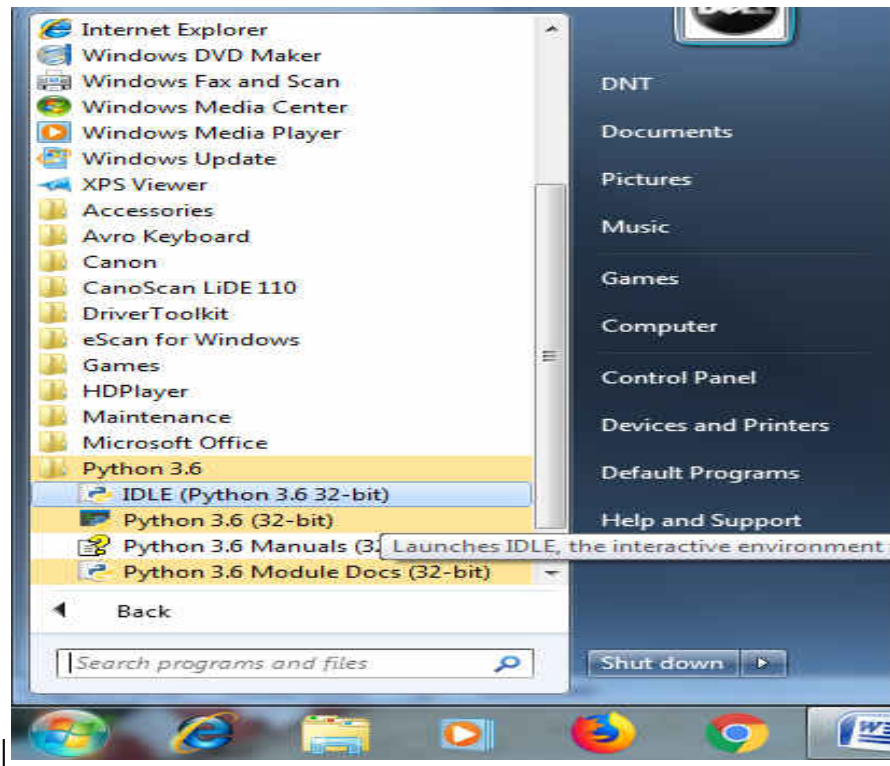
\* IDLE Shell G †Kvb †c«vM«vg GKevi ivb n†q †M†j cieZ©x†Z Zv  
 Avi cwieZ©b Kiv hvq bv|

\* IDLE Shell G †Kvb †c«vM«vg†K msi¶Y Kiv hvq bv|

IDLE Shell Gi B>Uvi†dm cwiwPwZ I n`v†jv †c«vM«vwgs :

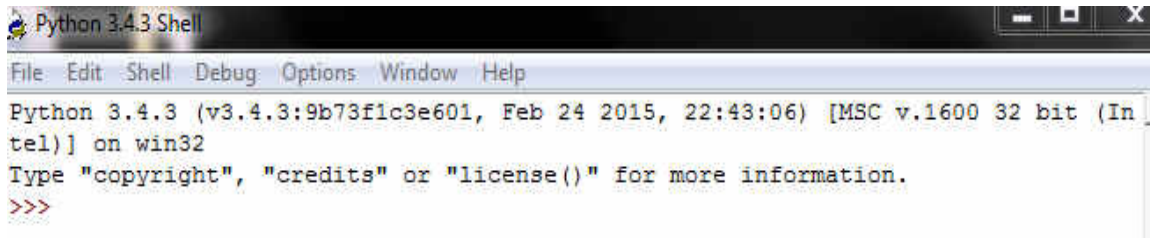
cvB\_†bi IDLE Shell \_v†K cvB\_b †dviv†i|

Acv†iwUs wm†÷g DB†ÚvR n†j †W`<U†ci GK`g wb†Pi Uv`<ev†ii  
 "Start" †gby †\_†K "Programs /All programs" G †h†Z n†e|



†mLv †\_†K 'Python 3.6' wjLv cvB\_b †dvivi Lyu†R †ei Ki†Z n†e|

Python 3.6 GUI- 32 bit)" wjLv GKwU dvBj|  
 dvBj wK-K KiZ n|e|  
 IDLE Shell Gi DBÛv †cBR Avm|e|



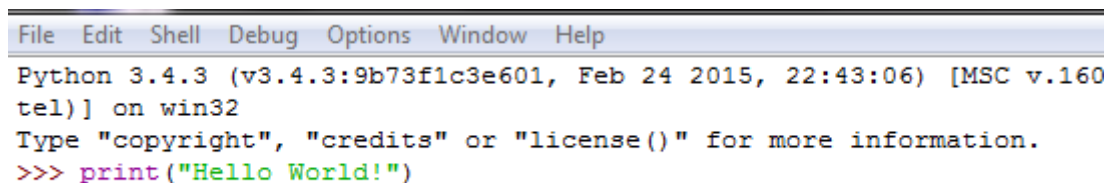
GUvB nj cvB\_†bi IDLE Shell|

IDLE Shell Gi G†Kev†i c«\_†gB \_v†K cvB\_†bi fvm©b I KwcivBU  
 mǎú†K© wKQy Z\_||

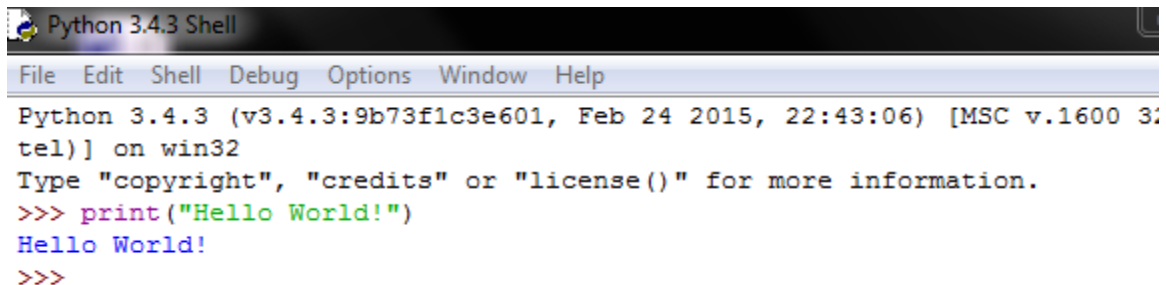
ZviciB cici wZbwU "greater- than signs"(>>>) †`Iqv \_v†K | G†`i†K  
 ejv nq prompt./primary prompt .| GB "greater- than signs" Gi ci  
 †\_†KB †c«vM«vg wjLv ïæ Ki†Z nq|

n`v†jv Iqvì© †c«vM«vgt

IDLE Shell G wc«U dvsk†bi gva`†g "Hello World!" †c«vM«vg  
 wjL†Z n|e| Interactive Mode G Zvr¶wbK †Kvb djvdj †c†Z PvB†j Zv  
 wc«U dvsk†bi gva`†g c«Kvk Kiv nq| Z†e Zv eva`Zvg~jK bq|  
 cvB\_†b †U·U†K D×...wZ wP†ýi gva`†g c«Kvk Kiv nq|



GLb G>Uvi †cÖm Kwi|



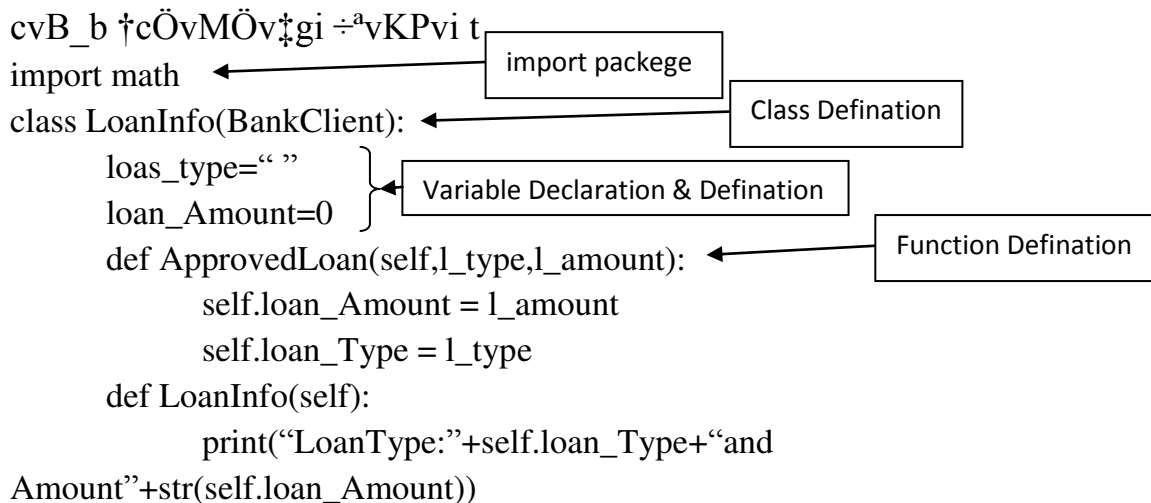


GUvB nj weL~vZ n~v~jv Iqvì© †c«vM«vg hv wKbv me~P~q `^yZ  
mg~qi g~a~ ivb nj|

j~ Ki~j †`Lv hv~e n~v~jv Iqvì© †c«vM«v~gi wb~P Av~iKwU  
'prompt sign' P~j Avm~Q| Av~iv †c«vM«vg wjwL|

```
Python 3.4.3 Shell
File Edit Shell Debug Options Window Help
Python 3.4.3 (v3.4.3:9b73f1c3e601, Feb 24 2015, 22:43:06) [MSC v.1600 32 bit (I
tel)] on win32
Type "copyright", "credits" or "license()" for more information.
>>> print("Hello World!")
Hello World!
>>> print("Python is just the language for you.")
Python is just the language for you.
>>> 2+2
4
>>>
```

~evSvB hv~"Q IDLE Shell G †c«vM«vg wjLv KZ mnR| GB †c«vM«vg~K  
msi~Y Kiv hv~e bv| GLb hw` IDLE Shell eÜ K~i †`Iqv nq, Z~e mg~  
~c«vM«vgB P~j hv~e|



- Bg~cvU© †~U~g~U (Import Statements)
- dvskb Ges K~vm †Wwd~bkb (Function & Class Definition)
- gwWDj †`<vc †fwi~qejm (Module scope variables)
- ~gBb †cÖvMÖvg (Main Program)

- `Bg†cvU© †÷U†g>U` (Import Statements) t

```
GB †mKk†b †Kvb jvB†e^awiK~vm†K cvB_b †cÖvMÖv†g e`envi
Kivi Rb` H K~v†mi c`v†KR†K †cÖvMÖv†g iiæ Bg†cvU© †÷U†g>U Gi
mvnv†h` Bg†cvU© K†i wb†Z nq| †hgb t import math K†i math.pi A_vr
†cÖvMÖv†g cvB Gi gvb e`envi Ki†Z cvwi e,,†Ei †yÎd†ji Rb`
math.pi*radius*radius| †hgbt import math, import sys, import random
```

- `dvskb Ges K~vm †Wwd†bkb` (Function & Class Defination) t

```
GB As†k wewfbœ dvskb ^Zwi Kiv Ges e`envi Kiv I K~vm †Nvlbv I
eb©bv Kiv nq|
†hgb Dc†ii †cÖvMÖv†g LoanInfo(BankClient) K~vm I
ApprovedLoan(),LoanInfo() `yBwU dvskb e`envi Kiv n†q†Q|
```

- `gwWDj †^vc †fwi†qejm` (Module scope variables) t

```
cvB_†bi ÷`vÛvW© jvB†e^awi wewfbœ gwWDj i†q†Q| H mg`^, gwWD†j
cÖwZwUi mv†_ GKvwaK †g_W i†q†Q| hv e`envi K†i Avgiv `^i mg†q
A†bK KvR mœúbœ Ki†Z cvwi| †hgbt
import math
print(math.ceil(8.5))
```

Class Defination

- `†gBb †cÖvMÖvg` (Main Program) t

```
†cÖvMÖv†gi GB As†k g~j †KvwWs Ges †cÖvMÖv†gi Gw~wKDkb
GB_vb †_†K iiæ nq| †cÖvMÖv†g e`enZ wewfbœ Ae†R± I dvskb
mg~n GBLvb †_†K Kj Kiv nq|
```

†cÖvMÖvg mg~n t

1) dvskb e`envi K‡i “Bangladesh Technical Education Board”

gwbU‡ii c`©vq cÖ`k©‡bi Rb” cvB\_‡b GKwU †cÖvMÖvg wjL|

def show():

print("Bangladesh Technical Education Board")

show()

AvDUcyUt

Bangladesh Technical Education Board

2) 02(yBwU) msL`v BbcyU wb‡q †hvMdj, we‡qvMdj, ,bdj I

fvMdj wbb©‡qi Rb” †cÖvMÖvg iPbv Ki|

a = int(input("Enter the First Number ="))

b = int(input("Enter the Second Number ="))

sum=a+b

dif=a-b

mul=a\*b

div=a/b

print("A+B = ",sum)

print("A-B = ",dif)

print("A\*B = ",mul)

print("A/B = ",div)

AvDUcyUt

Enter the First Number =50

Enter the Second Number =5

('A+B = ', 55)

('A-B = ', 45)

('A\*B = ', 250)

('A/B = ', 10)

**3) N msL·vK bv<sup>α</sup>vi BbcyU wb‡q ‡gvU b<sup>α</sup>i I Mogvb †ei Kivi  
Rb· †cÖvMÖvg wjL|**

```
n = int(input("How many integer number=?"))
```

```
sum=0
```

```
i=0
```

```
while i<n:
```

```
    a=input()
```

```
    sum=sum+a
```

```
    i=i+1
```

```
avg = sum/n
```

```
print("Summation of number=",sum)
```

```
print("Average of number=",avg)
```

AvDUcyUt

How many integer number=?6

34

98

65

45

33

90

('Summation of number=', 365)

('Average of number=', 60)

**4) dv‡ibnvBU ZvcgvÎv‡K †mwU<sup>a</sup>‡MÖW G iæcvšÍ‡ii Rb<sup>•</sup>  
‡cÖvMÖvg wjL|**

```
celsius = float(input("Enter the Celsius Temperature = ?"))
```

```
farhenheit = (celsius*1.8)+32
```

```
print("celsius to Farhenheit Temperature = ",farhenheit)
```

AvDUcyUt

Enter the Celsius Temperature = ?40

('celsius to Farhenheit Temperature = ', 104.0)

5) `fahr = float(input("Enter the Fahrenheit Temperature = ?"))  
celsius = (fahr-32)/1.8  
print("Fahrenheit to Celsius Temperature = ",celsius)  
AvDUcyUt`

Fahrenheit = float(input("Enter the Fahrenheit Temperature = ?"))

Celsius = (fahr-32)/1.8

print("Fahrenheit to Celsius Temperature = ",Celsius)

AvDUcyUt

Enter the Fahrenheit Temperature = ?104

('Fahrenheit to Celsius Temperature = ', 40.0)

6) `import math  
r=float(input("Enter Radius="))  
area = math.pi*r*r  
print("Circle Area = ",area)  
AvDUcyUt`

import math

r=float(input("Enter Radius="))

area = math.pi\*r\*r

print("Circle Area = ",area)

AvDUcyUt

Enter Radius=8

('Circle Area = ', 201.062)

w÷<sup>a</sup>s mαúwK©Z KwZcq †cÖvMÖvg (Write Simple programs using strings) t

```
†cÖvMÖvg - 1t w÷as ^Zwi Kiv Ges AvDUcy†U cÖ`k©b  
Kivi †cÖvMÖvg
```

```
# all of the following are equivalent  
my_string = 'Hello'  
print(my_string)
```

```
my_string = "Hello"  
print(my_string)
```

```
my_string = """Hello"""  
print(my_string)
```

```
# triple quotes string can extend multiple lines  
my_string = """Hello, welcome to  
the world of Python"""  
print(my_string)
```

```
†cÖvMÖvg - 2t `yBwU w÷as†K †Rvov jvMv†bvi  
†cÖvMÖvg A_ev KbKv†b†Ukb Acv†iUi e`envi K†i  
`yBwU w÷as†K †Rvov jvMv†bvi †cÖvMÖvg  
str1 = 'Hello'  
str2 = 'World!'  
# using +
```

```
print('str1 + str2 = ', str1 + str2)
```

output: str1 + str2 = HelloWorld



```
†cÖvMÖvg - 3t GKwU w÷as ev IqvW© BbcyU wb†q
KZ,†jv Kˆviv±vi i†q†Q Zv wcÖ›U Kivi Rbˆ GKwU
†cÖvMÖvg †jL|
```

```
word=input("Enter String or Word = ?")
c=0
for i in word:
    c=c+1
print("Total Character in", word,"=",c)
```

```
AvDUcyUt
Enter String or Word = ?
“Bangladesh Technical Education Board”
Total Character in Bangladesh Technical Education
Board = 36
```

```
†cÖvMÖvg - 4t len dvskb eˆenvi K†i GKwU w÷as ev
IqvW© BbcyU wb†q KZ,†jv Kˆviv±vi i†q†Q Zv wcÖ›U
Kivi Rbˆ GKwU †cÖvMÖvg †jL|
```

```
word=input("Enter String or Word = ?")
print("Total Character in ",word,"=",len(word))
```

```
AvDUcyUt
Enter String or Word = ?"Dhaka"
('Total Character in ', 'Dhaka', '=', 5)
```

```
‡cÖvMÖvg - 5t GKwU w÷as ev IqvW© BbcyU wb‡q
KZ, ‡jv fvD‡qj i‡q‡Q Zv wcÖ›U Kivi Rb̄ GKwU
‡cÖvMÖvg ‡jL|
```

```
word=input("Enter String or Word = ?")
word=word.lower()
c=0
for i in word:
    if('a'==i or'e'==i or'i'==i or'o'==i or'u'==i):
        c=c+1
print("Total Voul in",word,"= ",c)
```

```
AvDUcyUt
Enter String or Word = ?
“Bangladesh Technical Education”
Total Character in Bangladesh Technical Education
Board = 11
```

```
‡cÖvMÖvg - 6t GKwU w÷as ev IqvW© BbcyU wb‡q
wbw`©ó GKwU K̄viv±vi KZ, ‡jv i‡q‡Q Zv wcÖ›U Kivi
Rb̄ GKwU ‡cÖvMÖvg ‡jL|
```

```
word=input("Enter String or Word = ?")
word=word.lower()
ch=input("Enter Character = ")
ch=ch.lower()
c=0
for i in word:
    if(ch==i):
        c=c+1
print("Total",ch," in",word,"= ",c)
```

```
AvDUcyUt
Enter String or Word = ?"Technical Education"
Enter Character ="a"
('Total 'a' in word = ', 2)
>>>
```

```
‡cÖvMÖvg - 7t GKwU w÷as ev IqvW© BbcyU wb‡q
wifvm© AW©v‡i wcÖ>U Kivi Rb` GKwU †cÖvMÖvg
‡jL|
```

```
word=input("Enter String or Word = ?")
reverseword = word[::-1]
print("Reverse Word in ",word,"=",reverseword)
```

```
AvDUcyUt
Enter String or Word = ?"Dhaka"
('Reverse Word in ', 'Dhaka', '=', 'akahD')
```

```
>>>
```

7) **dvskb e`envi K`iwÎfy`Ri `yÎdj wbb©`qi Rb` †cÖvMÖvg  
wjL|**

```
import math
deftriagle_area():
a=float(input("Enter First Arm ="))
b=float(input("Enter Second Arm ="))
c=float(input("Enter Third Arm ="))
if(a+b)>c and (b+c)>a and (a+c)>b:
s=(a+b+c)/2
area=math.sqrt(s*(s-a)*(s-b)*(s-c))
print("Triangle Area= ",area)
else:
print("Triangle is not possible")
triagle_area()
AvDUcyUt
Enter first Arm =7
Enter Second Arm =9
Enter Third Arm =6
('Triangle Area= ', 20.97617696340303)
```

8) `wZbwU msL`vi g`a`n`Z e,,nEg msL`v wbb`qi Rb``

``cOvMÖvg wjL|`

```
def max3val():
```

```
    a=int(input("Enter first Number ="))
```

```
    b=int(input("Enter Second Number ="))
```

```
    c=int(input("Enter Third Number ="))
```

```
    if(a>b)and(a>c):
```

```
        print("A is maximum:",a)
```

```
    elif(b>c):
```

```
        print("B is maximum:",b)
```

```
    else:
```

```
        print("C is maximum:",c)
```

```
    max3val()
```

AvDUcyUt

Enter first Number =87

Enter Second Number =98

Enter Third Number =45

('B is maximum:', 98)

## 9) wØ-NvZ mgxKi‡Yi gvb wbb©‡qi Rb” †cÖvMÖvg wjL|

```
import math
defquardatic():
a=int(input("a ="))
b=int(input("b ="))
c=int(input("c ="))
d=(b*b)-(4*a*c)
if(d<0):
print("Roots are imaginary")
else:
x1=(-b+math.sqrt(d))/(2*a)
x2=(-b+math.sqrt(d))/(2*a)
print("X1=%.2f"%x1,"X2=%.2f"%x2)
print("Roots are Real")
quardatic()
AvDUcyUt
a =2
b =7
c =3
('X1=-0.50', 'X2=-0.50')
```

Roots are Real

**10) 1 n‡Z 100 ch©šÍ msL¨vi g‡a¨ †Rvo I we‡Rvo msL¨v †ei Kivi  
Rb¨ †cÖvMÖvg wjL(wj÷ e¨envi K‡i †cÖvMÖvg wjL)|**

```
even=[]
```

```
odd=[]
```

```
i=1
```

```
while i<=100:
```

```
if(i%2==0):
```

```
even.append(i)
```

```
else:
```

```
odd.append(i)
```

```
i=i+1
```

```
print("Even Number=",even)
```

```
print("Odd Number= ",odd)
```

```
AvDUcyUt
```

```
('Even Number=', [2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28,  
30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64,  
66, 68, 70, 72, 74, 76, 78, 80, 82, 84, 86, 88, 90, 92, 94, 96, 98,  
100])
```

('Odd Number= ', [1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47, 49, 51, 53, 55, 57, 59, 61, 63, 65, 67, 69, 71, 73, 75, 77, 79, 81, 83, 85, 87, 89, 91, 93, 95, 97, 99])

**11) N msL`vi ga`n`Z e,,nEg/ÿy`aZg msL`v wbb©`qi Rb`  
†cÖvMÖvg wjL|**

```
n = int(input("How many integer number=?"))
```

```
max=0
```

```
min=500
```

```
i=0
```

```
while i<n:
```

```
    a=input()
```

```
    if(max<a):
```

```
        max=a
```

```
    elif(min>a):
```

```
        min=a
```

```
    i=i+1
```

```
print("Maximum number=",max)
```

```
print("Minimum number=",min)
```

```
AvDUcyUt
```

```
How many integer number=?8
```

```
23
```



54

56

78

88

98

34

11

('Maximum number=', 98)

('Minimum number=', 11)

**12) Kvb msL v cÖvBg(gŠwjK) wKbv Zvnv wbb©qi Rb  
cÖvMÖvg wjL|**

```
n = int(input("Enter integer number=?"))
```

```
for i in range(2,n):
```

```
if(not(n%i)): break
```

```
i=i+1
```

```
if(i==n):
```

```
print(" this Number Prime")
```

```
else:
```

```
print(" this Number unprime")
```

```
AvDUcyUt
```

How many integer number=?23

this Number Prime

13) 2 n Z 100 ch šÍ msL v g a cÖvBg(gŠwjK) msL v  
wbb qí Rb cÖvMÖvg wjL|

```
n = int(input("How many Range =?"))
```

```
p=[]
```

```
for i in range(2,n):
```

```
for j in range(2,i+1):
```

```
if(not(i%j)): break
```

```
j=j+1
```

```
if(j==i):
```

```
p.append(i)
```

```
i=i+1
```

```
print("Prime Number =",p)
```

AvDUcyUt

How many Range =?100

('Prime Number =', [2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43,  
47, 53, 59, 61, 67, 71, 73, 79, 83, 89, 97])

cÖ ZKvix- †gvt Avāym †Qvenvb kvxg, BÝU<sup>a</sup>v±i, †dbx KwúDUvi BÝwUwUDU

14) `dvskb e"envi K:i KZ,jv msL"v:K †QvU †_ :K eo/ eo †_ :K †QvU AvKv:i mvRv:bvi Rb" †cÖvMÖvg wjL|`

```
n = int(input("How many Range =?"))
```

```
p=[]
```

```
for i in range(n):
```

```
p.append(input())
```

```
p.sort()
```

```
print("Ascending Order =",p)
```

```
p.sort(reverse=True)
```

```
print("Decending Order: ",p)
```

AvDUcyUt

How many Range =?10

9

1

8

2

7

4

6

5

10

3

('Ascending Order =', [1, 2, 3, 4, 5, 6, 7, 8, 9, 10])

('Decending Order: ', [10, 9, 8, 7, 6, 5, 4, 3, 2, 1])

**15) dvskb e"envi K‡i †Kvb msL"vi d"v±wiqvj gvb wbb©‡qi Rb"**

**†cÖvMÖvg wjL|**

```
def factorial(x):
```

```
    fact =1
```

```
    for i in range(1,x+1):
```

```
        fact=fact*i
```

```
    i=i+1
```

```
    return fact
```

```
n = int(input("Enter Number =?"))
```

```
print("Factorial value = ",factorial(n))
```

```
AvDUcyUt
```

```
Enter Number =?9
```

```
('Factorial value = ', 362880)
```

16) GKwU wj÷ KZ, jv msL v BbcyU wbq Zvnvi hvMdj  
wbb©qi Rb cÖvMÖvg jL|

```
n = int(input("How many integer number=?"))  
numn=[]  
i=0  
print("Enter Integer Number = ?")  
while i<n:  
    numn.append(input())  
    i=i+1  
print("Summation List = ",sum(numn))
```

AvDUcyUt

How many integer number=?5

Enter Integer Number = ?

56

54

32

78

21

('Summation List = ', 241)

17) GKwU w÷<sup>a</sup>s BbcyU wb‡q wifvm© AW©v‡i mvRv‡bvi Rb”  
‡cÖvMÖvg ‡jL|

```
str1= input("Enter Word =")
```

```
str2=str1[::-1]
```

```
print(str2)
```

```
AvDUcyUt
```

```
Enter Word =
```

```
FCI
```

```
ICF
```

**18) Nested elif I dvskb e”envi K‡i gvK©m BbcyU wb‡q ‡MÖW  
wbb©‡qi Rb” ‡cÖvMÖvg ‡jL|**

```
def grade(mark):
```

```
if(mark>=80):
```

```
return "A+"
```

```
elif(mark>=75):
```

```
return "A"
elif(mark>=70):
return "A-"
elif(mark>=65):
return "B+"
elif(mark>=60):
return "B"
elif(mark>=55):
return "B-"
elif(mark>=50):
return "C+"
elif(mark>=45):
return "C"
elif(mark>=40):
return "D"
else:
return "F"
mark=int(input("Enter Mark ="))
print("Your Grade: ",grade(mark))
AvDUcyUt
Enter Mark =78
('Your Grade: ', 'A')
```





**19) 1+2+3+ ..... +N**

**19) 1+2+3+ ..... +N**

```
def sum(x):
```

```
sum =0
```

```
for i in range(1,x+1):
```

```
sum=sum+i
```

```
i=i+1
```

```
return sum
```

```
n = int(input("Enter Number =?"))
```

```
print("1+2+3+ ----+ N = ",sum(n))
```

AvDUcyUt

Enter Number =?100

('1+2+3+ ----+ N = ', 5050)

**20) 1+3+5+ ..... +N**

**20) 1+3+5+ ..... +N**

```
def sum(x):
```

```
sum =0
```

```

for i in range(1,x+1,2):
sum=sum+i
return sum
n = int(input("Enter Number =?"))
print("1+3+5+ ----+ N = ",sum(n))

```

AvDUcyUt

Enter Number =?100

('1+3+5+ ----+ N = ', 2500)

**21) 2+4+6+ ----- +N**

```

def sum(x):
sum =0
for i in range(2,x+1,2):
sum=sum+i
return sum
n = int(input("Enter Number =?"))
print("2+4+6+ ----+ N = ",sum(n))

```

AvDUcyUt

Enter Number =?100

('2+4+6+ ----+ N = ', 2500)

**22) 12+22+32+ ----- +N2**

```
def sum(x):
```

```
sum =0
```

```
for i in range(1,x+1):
```

```
sum=sum+i*i
```

```
return sum
```

```
n = int(input("Enter Number =?"))
```

```
print("Sum of Square Series = ",sum(n))
```

AvDUcyUt

Enter Number =?10

('12+22+32+ ----- +N2 = ', 385)