

Jaypee University of Engineering and Technology, Guna



[Lab-I]

18B17CI373 –

Advanced Programming

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A. Execute following and evaluate the answer.

a. >>>Age = 20

b. >>>Pi = 3.14

c. >>>Name = 'Amit'

d. >>>Laptop@ = 1000000

e. >>>sirname = Sharma

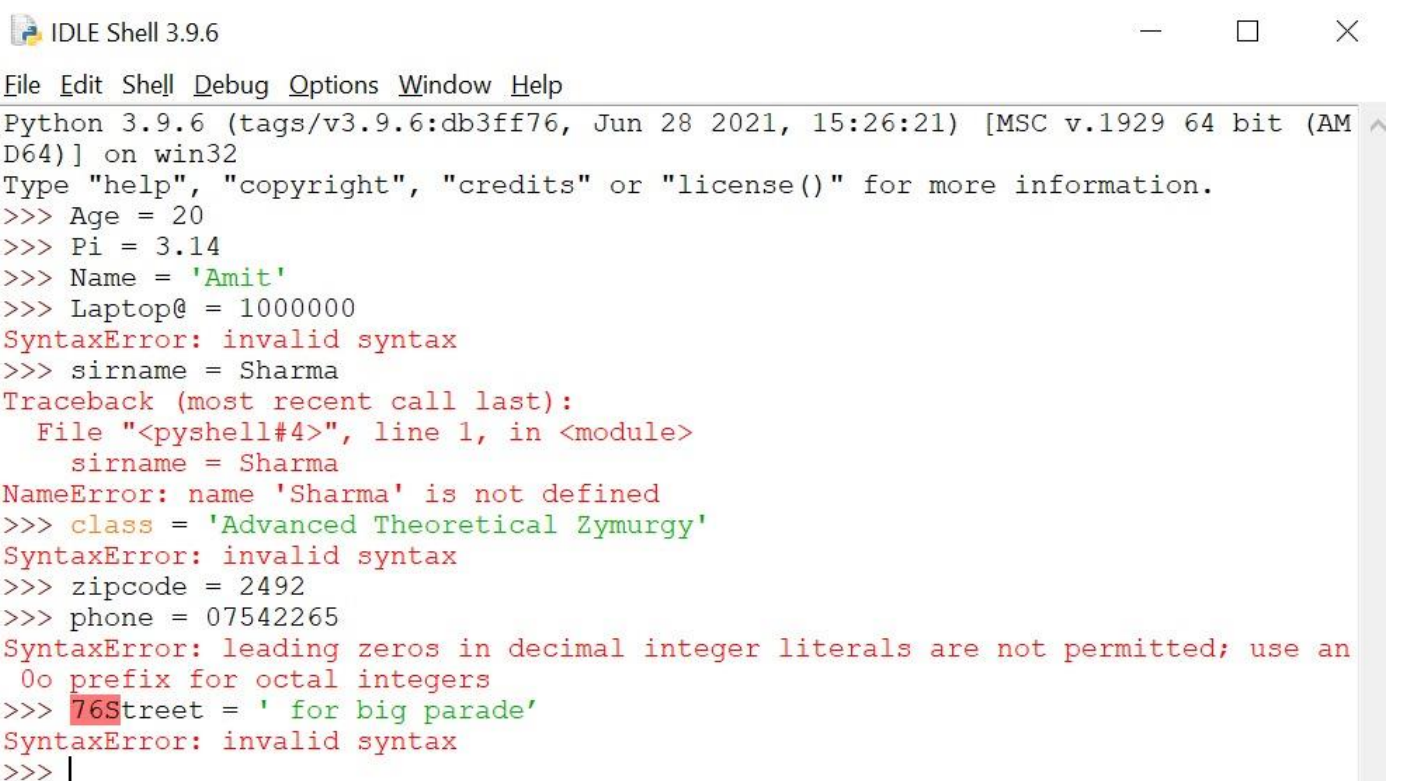
f. >>>class = 'Advanced Theoretical Zymurgy'

g. >>>zipcode = 2492

h. >>>phone = 07542265

i. >>>76Street = ' for big parade'

Solution-Output:



The screenshot shows the IDLE Shell 3.9.6 window. The menu bar includes File, Edit, Shell, Debug, Options, Window, and Help. The status bar at the bottom indicates 'Python 3.9.6 (tags/v3.9.6:db3ff76, Jun 28 2021, 15:26:21) [MSC v.1929 64 bit (AMD64)] on win32'. The main text area contains the following code and output:

```
>>> Age = 20
>>> Pi = 3.14
>>> Name = 'Amit'
>>> Laptop@ = 1000000
SyntaxError: invalid syntax
>>> sirname = Sharma
Traceback (most recent call last):
  File "<pyshell#4>", line 1, in <module>
    sirname = Sharma
NameError: name 'Sharma' is not defined
>>> class = 'Advanced Theoretical Zymurgy'
SyntaxError: invalid syntax
>>> zipcode = 2492
>>> phone = 07542265
SyntaxError: leading zeros in decimal integer literals are not permitted; use an
0o prefix for octal integers
>>> 76Street = ' for big parade'
SyntaxError: invalid syntax
>>> |
```

B. Evaluate following expressions.

a. `>>>minute = 59`

b. `>>>minute/60`

c. `>>>17`

d. `>>>x`

e. `>>>x + 17`

f. `>>>miles = 26.2`

g. `>>>print miles * 1.61`

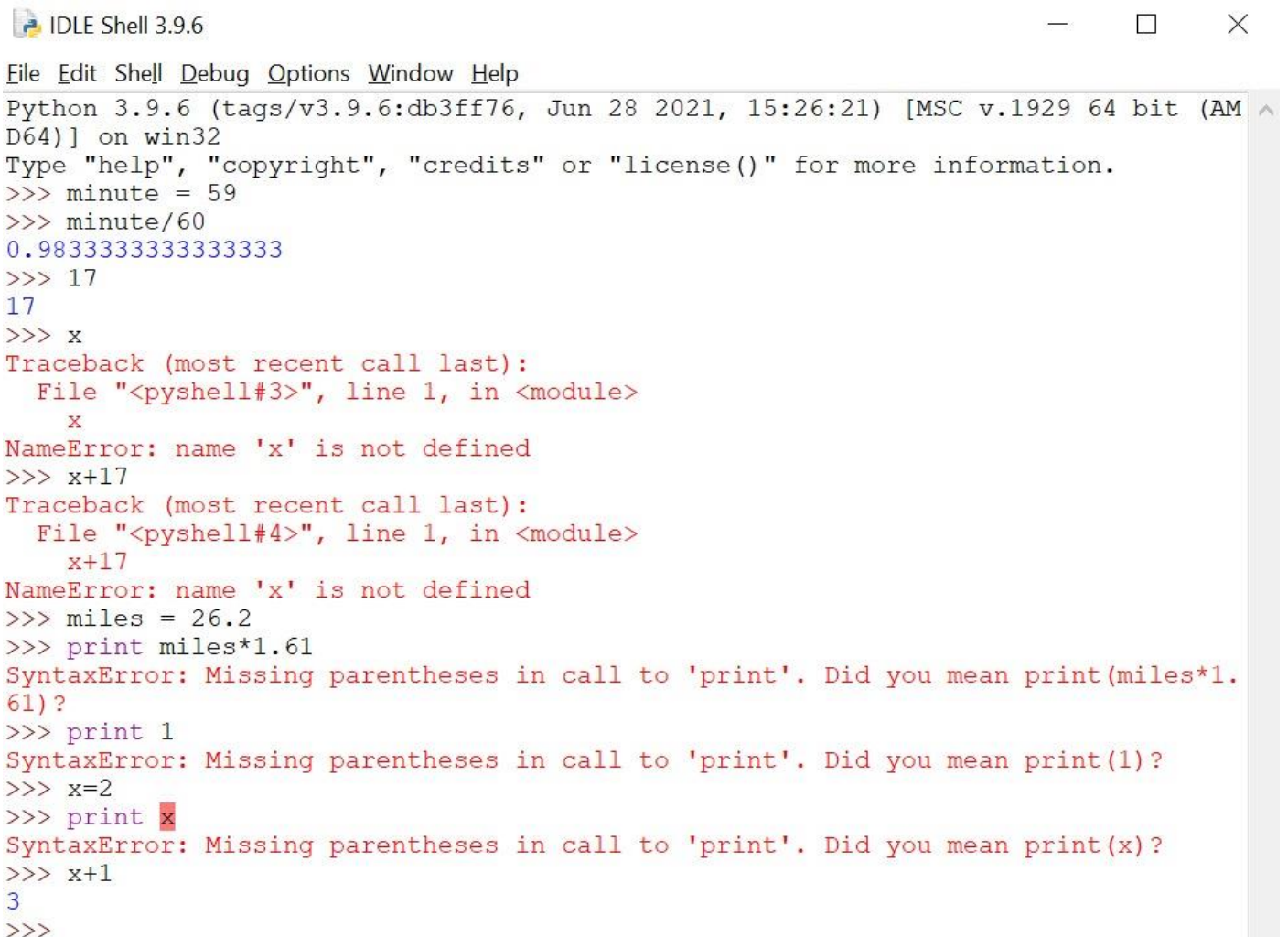
h. `>>>print 1`

i. `>>>x = 2`

j. `>>>print x`

k. `>>>x + 1`

Solution-Output:



The screenshot shows the IDLE Shell 3.9.6 window. The menu bar includes File, Edit, Shell, Debug, Options, Window, and Help. The status bar at the bottom indicates Python 3.9.6 (tags/v3.9.6:db3ff76, Jun 28 2021, 15:26:21) [MSC v.1929 64 bit (AMD64)] on win32. The main text area contains the following code and output:

```
Python 3.9.6 (tags/v3.9.6:db3ff76, Jun 28 2021, 15:26:21) [MSC v.1929 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>> minute = 59
>>> minute/60
0.9833333333333333
>>> 17
17
>>> x
Traceback (most recent call last):
  File "<pyshell#3>", line 1, in <module>
    x
NameError: name 'x' is not defined
>>> x+17
Traceback (most recent call last):
  File "<pyshell#4>", line 1, in <module>
    x+17
NameError: name 'x' is not defined
>>> miles = 26.2
>>> print miles*1.61
SyntaxError: Missing parentheses in call to 'print'. Did you mean print(miles*1.61)?
>>> print 1
SyntaxError: Missing parentheses in call to 'print'. Did you mean print(1)?
>>> x=2
>>> print x
SyntaxError: Missing parentheses in call to 'print'. Did you mean print(x)?
>>> x+1
3
>>>
```

C. Assume that we execute the following assignment statements:

width = 17

height = 12.0

delimiter = '.'

For each of the following expressions, write the value of the expression and the type (of the value of the expression).

a. $\text{width}/2$

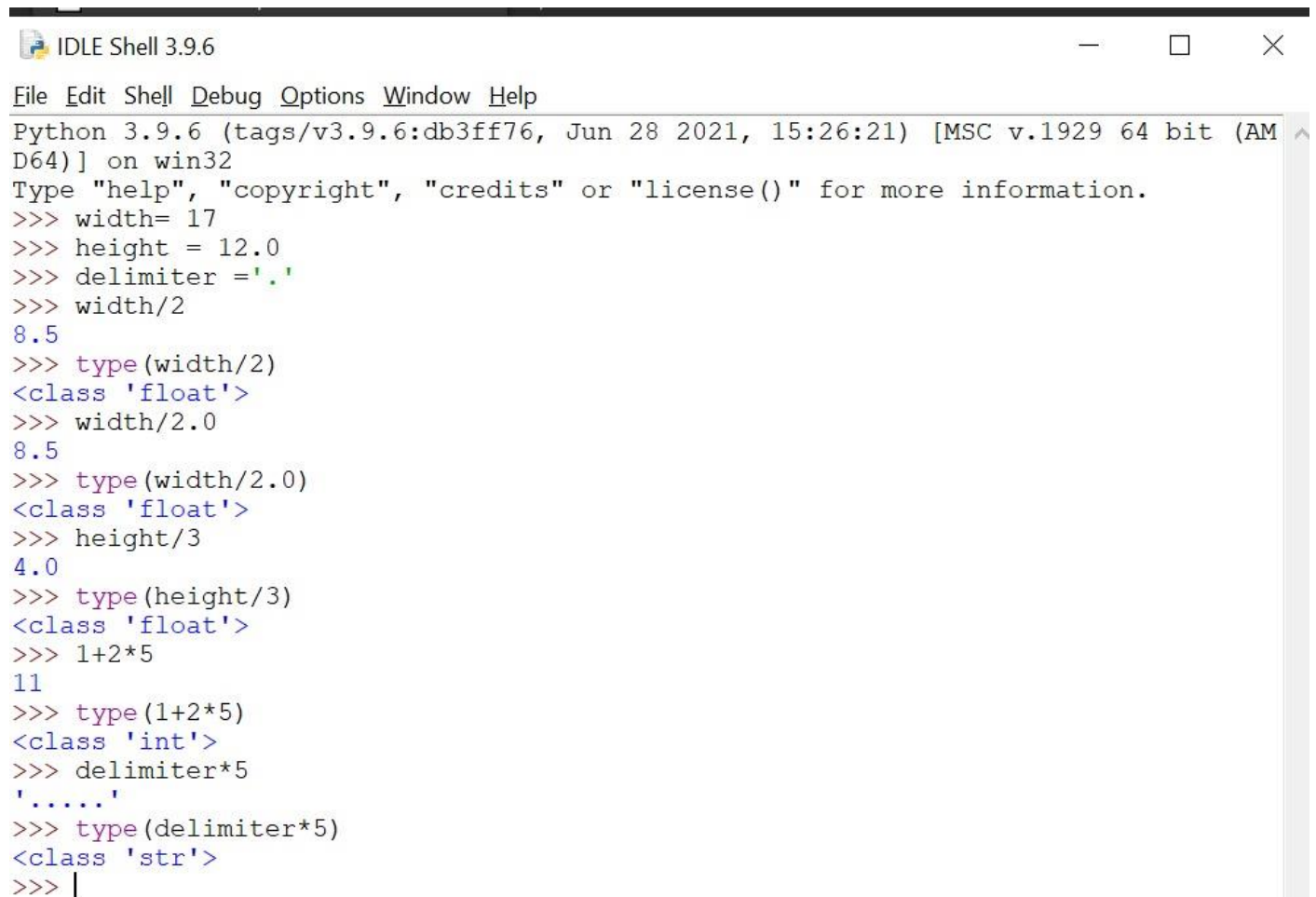
b. $\text{width}/2.0$

c. $\text{height}/3$

d. $1 + 2 * 5$

e. $\text{delimiter} * 5$

Solution:



```
IDLE Shell 3.9.6
File Edit Shell Debug Options Window Help
Python 3.9.6 (tags/v3.9.6:db3ff76, Jun 28 2021, 15:26:21) [MSC v.1929 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>> width= 17
>>> height = 12.0
>>> delimiter = '.'
>>> width/2
8.5
>>> type(width/2)
<class 'float'>
>>> width/2.0
8.5
>>> type(width/2.0)
<class 'float'>
>>> height/3
4.0
>>> type(height/3)
<class 'float'>
>>> 1+2*5
11
>>> type(1+2*5)
<class 'int'>
>>> delimiter*5
'.....'
>>> type(delimiter*5)
<class 'str'>
>>> |
```


D. Verify the priorities and rules of precedence for operators.

Solution:

Date ____/____/____

Page _____

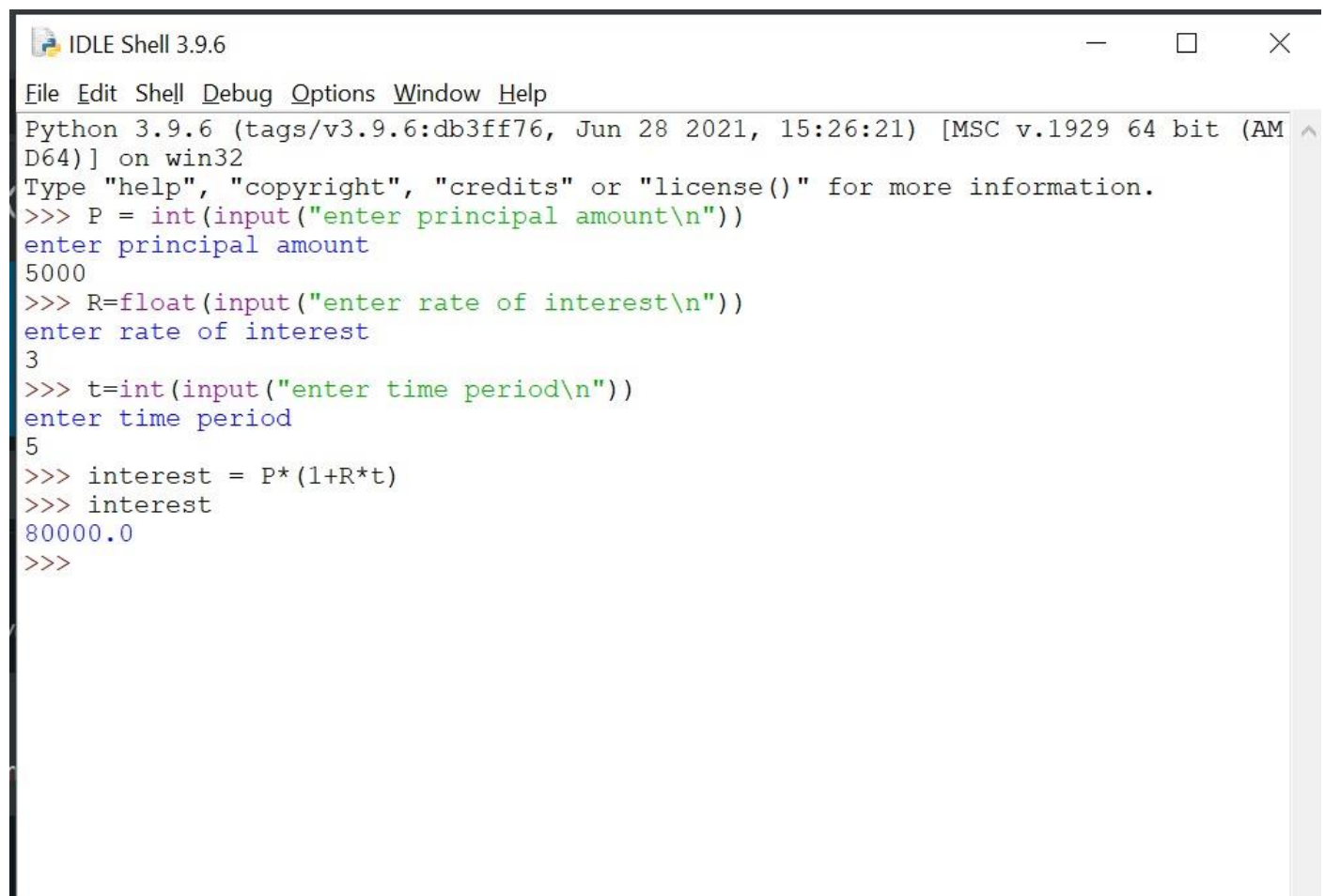
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(D)	Operator	Description
	**	Exponentiation
	~ + -	Complement, unary plus and minus
	* / % //	Multiply, divide, modulo and floor division
	+ -	Addition and Subtraction
	>> <<	Right and left bitwise shift
	&	Bitwise 'And'
	^	Bitwise exclusive 'OR' and regular 'OR'
	<= < > >=	Comparison operators
	< > == !=	Equality operators
	= %= /= //= -= +=	Assignment operators
	* = ** = *	
	is is not	Identity operators
	in not in	Membership operators
	not or and	Logical operators

E. Calculate simple interest on shell.

Note: Request your Teacher to demonstrate python program execution from a file, taking input from user at run time. Write rest of the programs on the same pattern.

Solution:

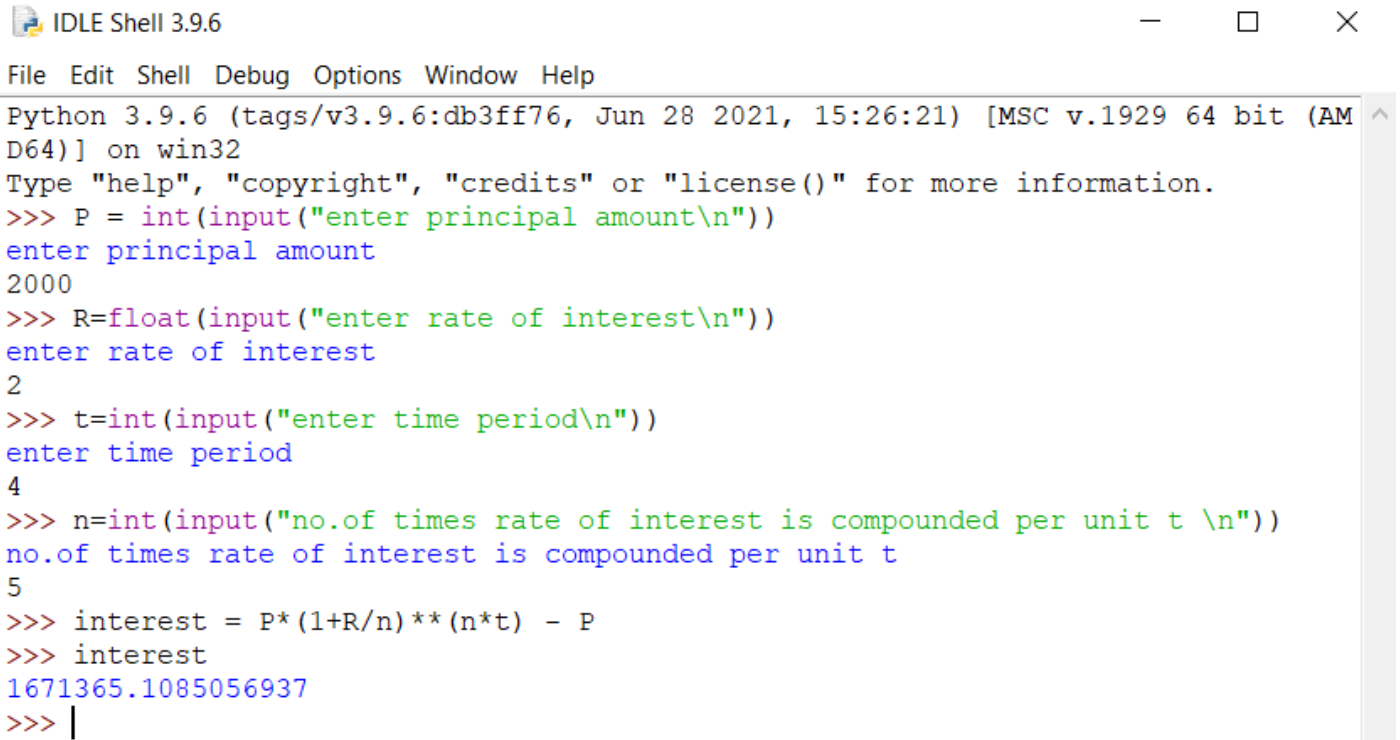


```
IDLE Shell 3.9.6
File Edit Shell Debug Options Window Help
Python 3.9.6 (tags/v3.9.6:db3ff76, Jun 28 2021, 15:26:21) [MSC v.1929 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>> P = int(input("enter principal amount\n"))
enter principal amount
5000
>>> R=float(input("enter rate of interest\n"))
enter rate of interest
3
>>> t=int(input("enter time period\n"))
enter time period
5
>>> interest = P*(1+R*t)
>>> interest
80000.0
>>>
```

F. Calculate compound interest.

$$\text{Compound Interest} = P(1+r/n)^{nt} - P$$

Solution:



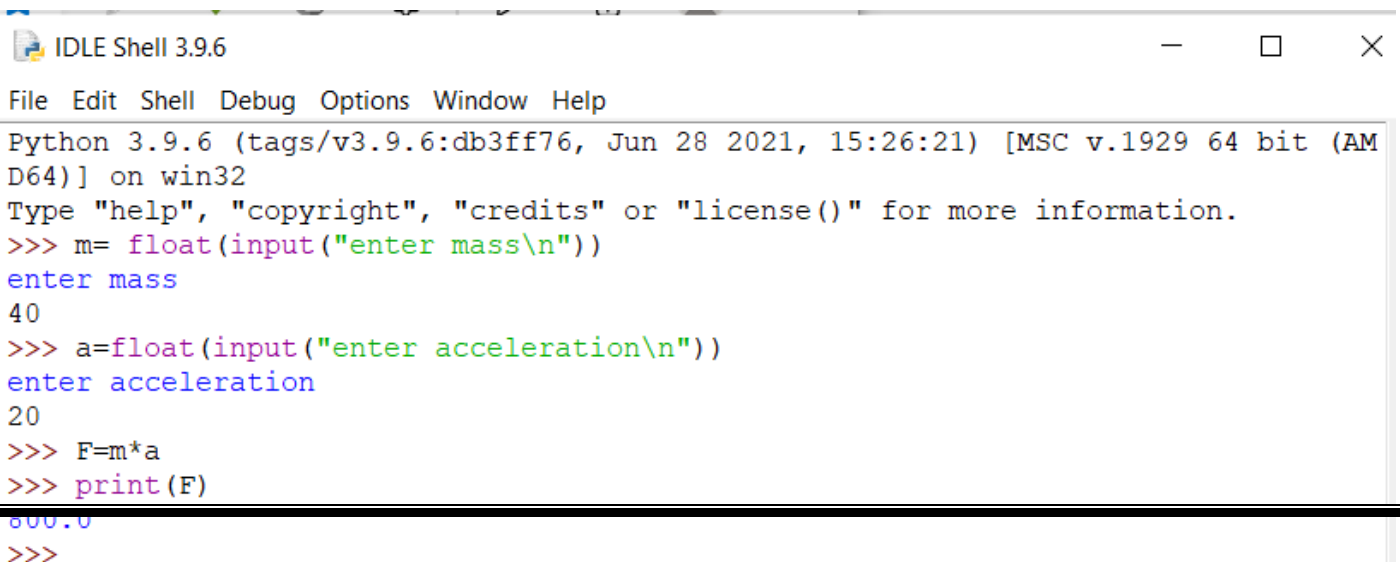
```

IDLE Shell 3.9.6
File Edit Shell Debug Options Window Help
Python 3.9.6 (tags/v3.9.6:db3ff76, Jun 28 2021, 15:26:21) [MSC v.1929 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>> P = int(input("enter principal amount\n"))
enter principal amount
2000
>>> R=float(input("enter rate of interest\n"))
enter rate of interest
2
>>> t=int(input("enter time period\n"))
enter time period
4
>>> n=int(input("no.of times rate of interest is compounded per unit t \n"))
no.of times rate of interest is compounded per unit t
5
>>> interest = P*(1+R/n)**(n*t) - P
>>> interest
1671365.1085056937
>>> |
  
```

G. Find the value of force when mass of a body and its acceleration is given.

$$F = m * a$$

Solution:



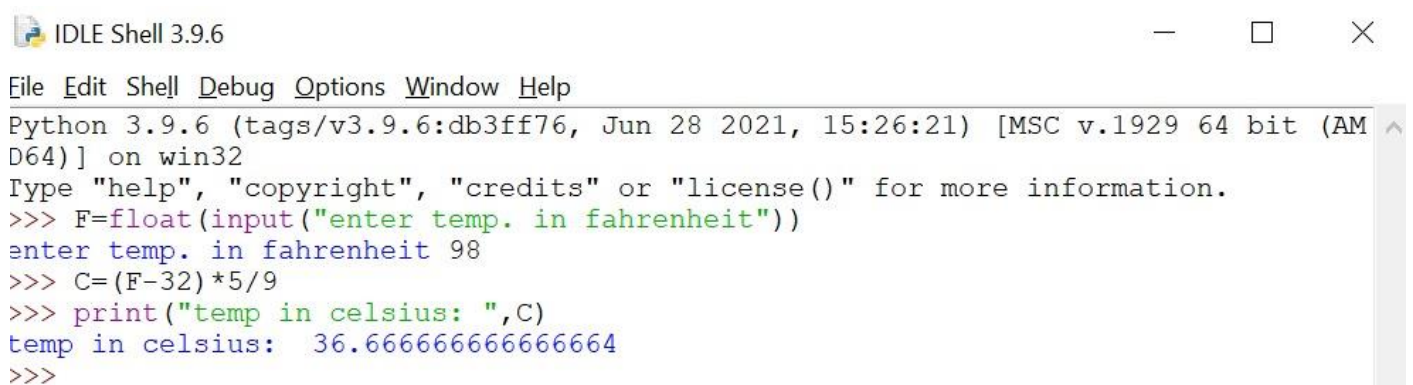
```

IDLE Shell 3.9.6
File Edit Shell Debug Options Window Help
Python 3.9.6 (tags/v3.9.6:db3ff76, Jun 28 2021, 15:26:21) [MSC v.1929 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>> m= float(input("enter mass\n"))
enter mass
40
>>> a=float(input("enter acceleration\n"))
enter acceleration
20
>>> F=m*a
>>> print(F)
800.0
>>>
  
```


H. Convert a temperature from Celsius to Fahrenheit.

$$C = (F - 32) * 5/9$$

Solution:



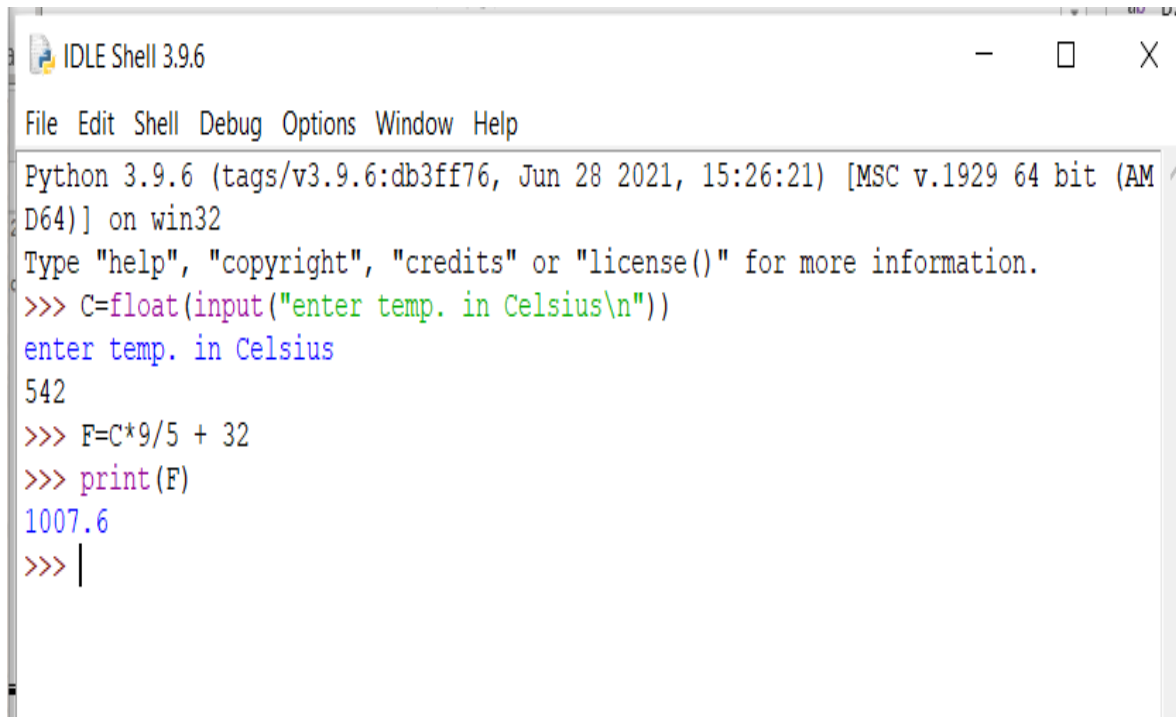
The screenshot shows a Python IDLE Shell window with the following content:

```
IDLE Shell 3.9.6
File Edit Shell Debug Options Window Help
Python 3.9.6 (tags/v3.9.6:db3ff76, Jun 28 2021, 15:26:21) [MSC v.1929 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>> F=float(input("enter temp. in fahrenheit"))
enter temp. in fahrenheit 98
>>> C=(F-32)*5/9
>>> print("temp in celsius: ",C)
temp in celsius: 36.666666666666664
>>>
```

I. Convert a temperature from Fahrenheit to Celsius.

$$F = C * 9/5 + 32$$

Solution:

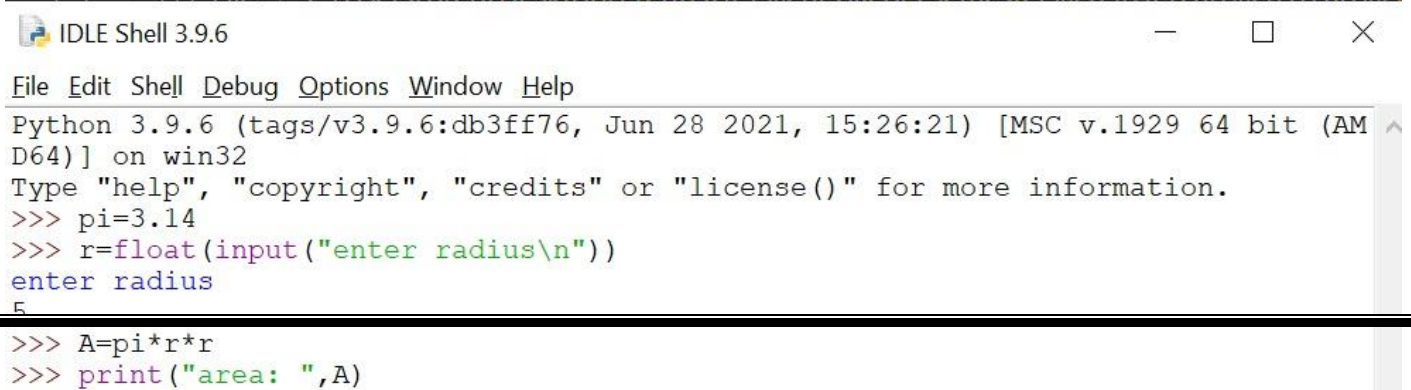


```
IDLE Shell 3.9.6
File Edit Shell Debug Options Window Help
Python 3.9.6 (tags/v3.9.6:db3ff76, Jun 28 2021, 15:26:21) [MSC v.1929 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>> C=float(input("enter temp. in Celsius\n"))
enter temp. in Celsius
542
>>> F=C*9/5 + 32
>>> print(F)
1007.6
>>> |
```

J. Compute the area of circle, when its diameter is given.

$$A = \pi r^2$$

Solution:

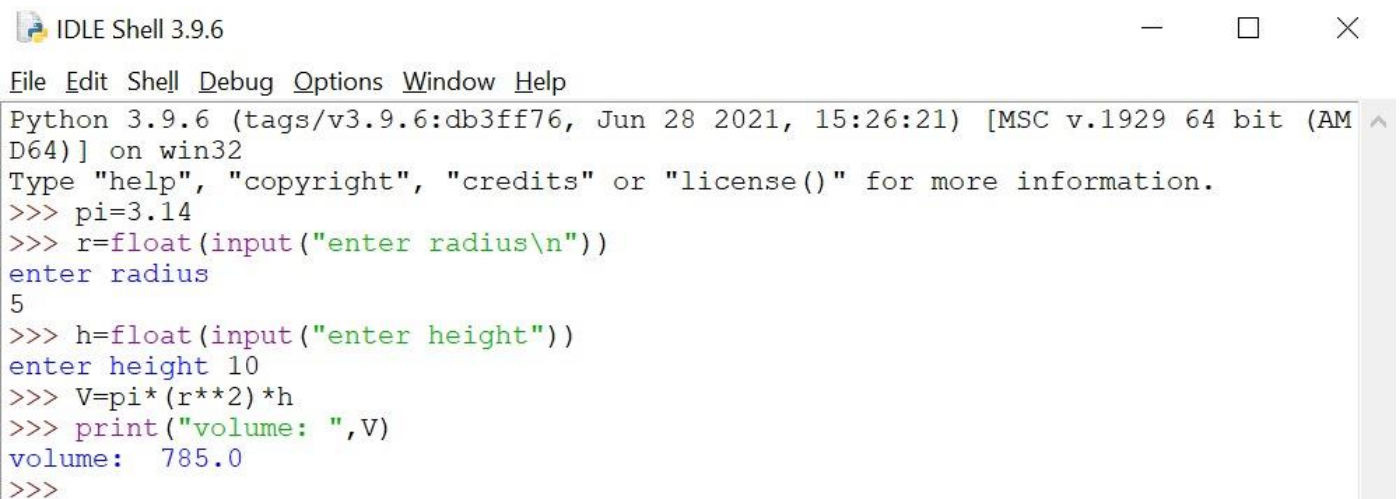


```
IDLE Shell 3.9.6
File Edit Shell Debug Options Window Help
Python 3.9.6 (tags/v3.9.6:db3ff76, Jun 28 2021, 15:26:21) [MSC v.1929 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>> pi=3.14
>>> r=float(input("enter radius\n"))
enter radius
5
>>> A=pi*r*r
>>> print("area: ",A)
```

K. Compute the volume of a cylinder, when its height and diameter is given. The volume V for a right circular cylinder with radius r and height h is given by the formula:

$$V = \pi r^2 h$$

Solution:



```
IDLE Shell 3.9.6
File Edit Shell Debug Options Window Help
Python 3.9.6 (tags/v3.9.6:db3ff76, Jun 28 2021, 15:26:21) [MSC v.1929 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>> pi=3.14
>>> r=float(input("enter radius\n"))
enter radius
5
>>> h=float(input("enter height\n"))
enter height 10
>>> V=pi*(r**2)*h
>>> print("volume: ",V)
volume: 785.0
>>>
```

L. Compute the surface area of a cylinder, when its height and diameter is given.

$$A = 2\pi r^2 + 2\pi rh$$

Solution:

IDLE Shell 3.9.6

File Edit Shell Debug Options Window Help

Python 3.9.6 (tags/v3.9.6:db3ff76, Jun 28 2021, 15:26:21) [MSC v.1929 64 bit (AMD64)] on win32

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

```
>>> pi=3.14
```

```
>>> r=float(input("enter radius" )
```

```
enter radius3
```

```
>>> h=float(input("enter height\n"))
```

```
enter height
```

```
15
```

```
>>> A=2*pi*(r**2) + 2*pi*r*h
```

```
>>> print(A)
```

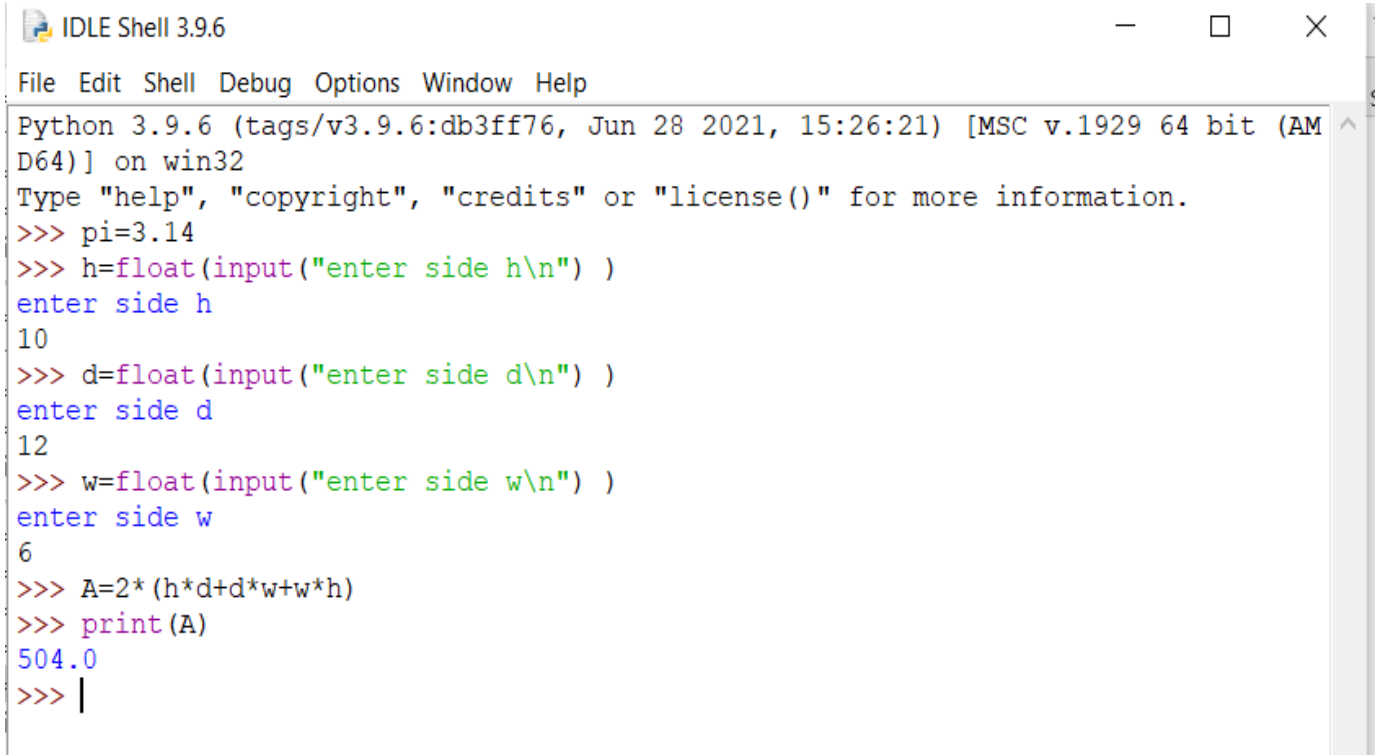
```
339.12
```

```
>>> |
```

M. Compute the area of a rectangular prism, when it's all sides is given.

$$A = 2 * (H * D * D * W * W * H)$$

Solution:

A screenshot of an IDLE Shell 3.9.6 window. The window title is "IDLE Shell 3.9.6". The menu bar includes "File", "Edit", "Shell", "Debug", "Options", "Window", and "Help". The status bar at the bottom shows "Python 3.9.6 (tags/v3.9.6:db3ff76, Jun 28 2021, 15:26:21) [MSC v.1929 64 bit (AMD64)] on win32". The main text area contains the following Python code:

```
>>> pi=3.14
>>> h=float(input("enter side h\n") )
enter side h
10
>>> d=float(input("enter side d\n") )
enter side d
12
>>> w=float(input("enter side w\n") )
enter side w
6
>>> A=2*(h*d+d*w+w*h)
>>> print(A)
504.0
>>> |
```

N. Compute the volume of a rectangular prism, when it's all sides are given.

$$\text{Volume} = h.d.w$$

Solution:

File Edit Shell Debug Options Window Help

Python 3.9.6 (tags/v3.9.6:db3ff76, Jun 28 2021, 15:26:21) [MSC v.1929 64 bit (AMD64)] on win32

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

>>> pi=3.14

>>> h=float(input("enter side h\n"))

enter side h

10

>>> d=float(input("enter side d\n"))

enter side d

5

>>> w=float(input("enter side w\n"))

enter side w

7

>>> V=h*d*w

>>> print("Volume: ",V)

Volume: 350.0

>>> |