

PYTHON ASSIGNMENT – 15

1. How many seconds are in an hour? Use the interactive interpreter as a calculator and multiply the

number of seconds in a minute (60) by the number of minutes in an hour (also 60).

sol. 60

2. Assign the result from the previous task (seconds in an hour) to a variable called

seconds_per_hour.

3. How many seconds do you think there are in a day? Make use of the variables seconds per hour

and minutes per hour.

4. Calculate seconds per day again, but this time save the result in a variable called seconds_per_day

5. Divide seconds_per_day by seconds_per_hour. Use floating-point (/) division.

6. Divide seconds_per_day by seconds_per_hour, using integer (//) division. Did this number agree

with the floating-point value from the previous question, aside from the final .0?

7. Write a generator, genPrimes, that returns the sequence of prime numbers on successive calls to

its next() method: 2, 3, 5, 7, 11, ...

SOLUTIONS

1. Calculate seconds in an hour

```
seconds_per_hour = 60 * 60
```

3. Calculate seconds in a day

```
minutes_per_hour = 60
```

```
hours_per_day = 24
```

```
seconds_per_day = seconds_per_hour * minutes_per_hour *  
hours_per_day
```

5. Floating-point division

```
floating_point_result = seconds_per_day / seconds_per_hour
```

6. Integer division

```
integer_result = seconds_per_day // seconds_per_hour
```

7. Prime number generator

```
def genPrimes():
```

```
    primes = [2]
```

```
    yield 2
```

```
    current_number = 3
```

```
    while True:
```

```
        is_prime = all(current_number % prime != 0 for prime in primes)
```

```
        if is_prime:
```

```
            primes.append(current_number)
```

```
yield current_number
```

```
current_number += 2
```

```
# Example usage of genPrimes
```

```
prime_generator = genPrimes()
```

```
for _ in range(5):
```

```
    print(next(prime_generator))
```

Explanation:

1. `seconds_per_hour` is calculated by multiplying the number of seconds in a minute (60) by the number of minutes in an hour (60).
2. The result is assigned to the variable `seconds_per_hour`.
3. `seconds_per_day` is calculated using the variables `seconds_per_hour`, `minutes_per_hour`, and `hours_per_day`.
4. The floating-point division result is stored in the variable `floating_point_result`.
5. Integer division result is stored in the variable `integer_result`.
6. The `genPrimes` generator function generates prime numbers on successive calls to its `next()` method. It starts with the first prime number (2) and then generates subsequent prime numbers.