Sample Answer for Programming Assignment Unit 4

Python Program

```
# Return True if x is divisible by y, otherwise False
def is_divisible(x, y):
   if x % y == 0:
      return True
   else:
      return False

# Return True if a is an integer power of b, otherwise False
# Expects both arguments to be nonzero
def is_power(a, b):
   if a == b: # base case where a/b == 1
      return True
   elif b == 1: # base case where b == 1 but a does not
      return False
   else:
      return is_divisible(a, b) and is_power(a/b, b)

print("is_power(10, 2) returns: ", is_power(10, 2))
print("is_power(27, 3) returns: ", is_power(27, 3))
print("is_power(1, 1) returns: ", is_power(1, 1))
print("is_power(10, 1) returns: ", is_power(10, 1))
print("is_power(3, 3) returns: ", is_power(3, 3))
```

Output for Python 3

```
is_power(10, 2) returns: False
is_power(27, 3) returns: True
is_power(1, 1) returns: True
is_power(10, 1) returns: False
is_power(3, 3) returns: True
```

Output for Python 2

```
('is_power(10, 2) returns: ', False)
('is_power(27, 3) returns: ', True)
('is_power(1, 1) returns: ', True)
('is_power(10, 1) returns: ', False)
('is_power(3, 3) returns: ', True)
```