#2017 Q1

```
import math

radius_Sphere = float(input("Radius of the sphere: "))
height_Column = float(input("Height of the column: "))
width_Cube = float(input("Width of the cube: "))

surfacearea_Sphere = 4 * math.pi * math.pow(radius_Sphere, 2)
surfacearea_Column = (2 * math.pi * (radius_Sphere/2) * height_Column) + (2 * math.pi * ((radius_Sphere/2)
** 2))
surfacearea_Cube = 6 * (width_Cube ** 2)

total_SurfaceArea = surfacearea_Sphere + surfacearea_Column + surfacearea_Cube

print("The total surface area of the Time Capsule is {:.2f}".format(total_SurfaceArea))
```

#2017 - Q2

```
#Part(a)
Prompt the user for total weight of baggage
Read total weight
IF total weight > 30 THEN
        Calculate excess = total weight – 30
        Calculate charge = excess * 12
        Display excess
        Display charge
ELSE
        Display message for no charge
ENDIF
```

```
#Part(b)
weight = float(input('Please enter total weight of baggage: '))

if weight > 30:
   excess = weight - 30
   charge = excess * 12
   print('Your baggage is {:.2f}kg more than the limit of 30kg.'.format(excess))
   print('You will have to pay ${:.2f}.'.format(charge))
else:
   print("You do not have to pay for your baggage.")
```

```
#2017 - Q3

student_list = ['John Tan', 'Tom Ong', 'Jane Lim', 'Jim Ng', \
               'Mary Choo', 'Steve Goh', 'Anne Lee']
mark_list = [100, 75, 80, 20, 50, 70, 95]

#Display all the students and their marks
#Calculate the average marks for these students
print('{:15s}   {:5s}'.format ('Student', 'Mark'))

#using while loop
i = 0;
total = 0
while i < len(student_list):
   print('{:15s}   {:5d}'.format (student_list[i], mark_list[i]))
   total += mark_list[i]
   i = i + 1

average = total / len(student_list)
print('The average mark of {} students is {}'.format(len(student_list),average))


#Display the marks of the student whose surname is "Goh"

for i in range(len(student_list)):
   name = student_list[i]
   if (name.find('Goh') != -1):
      print('Student {} has {} marks'.format(name,mark_list[i]))



#2017 - Q4

prog = input('Please enter your program in a string: ')

count = 0
balancedSoFar = True

i = 0
while(i < len(prog)):
   ch = prog[i]
   if ch == '(':
      count += 1      #increment count for open parenthesis
   elif ch == ')':
      if count > 0:
         count -= 1  #decrement count for close parenthesis
      else:
         balancedSoFar = False
         break
   i += 1
```

```
if balancedSoFar and count == 0:
    print('The program has balanced delimiters')
else:
    print('The program does not have balanced delimiters')
```

```
#2018 - Q1

timing = input("Enter timing taken of 3 rounds separated by \';\'(seconds): ")
timing_list = timing.split(';')

speed_in_km_per_hr = 1.2 /((int(timing_list[0]) + int(timing_list[1]) + int(timing_list[2]))
                        / (60*60))

print("Tom's average speed is {:.1f} km/h".format(speed_in_km_per_hr))

first_round_min = int(timing_list[0]) // 60
first_round_sec = int(timing_list[0]) % 60

print('Tom took {} min and {} seconds for the first round'.format(first_round_min,first_round_sec))



#2018 Q2

a) Prompt for weight of parcel in kg
    Get weight
   Prompt for need for express service
   Get express
   IF weight<=1 THEN
           Set cost to 10
   ELSE IF weight < 5 THEN
           Set cost to 15
   ELSE
           Set cost to 20
   ENDIF

   IF express=="y" or express=="Y" THEN
           cost is increased by 10.5
   ENDIF
   Display the cost in money format


#Part (b)
weight=float(input("Enter weight of parcel in kg : "))
express=input("Is express service required (y/n) : ")

if weight<=1:
   cost=10
elif weight < 5:
   cost=15
else:
   cost=20

if express=="y" or express=="Y":
   cost=cost+10.5
```

```
print("The cost is ${:.2f}".format(cost))



#2018 Q3

#Part (a) - create three lists to store the data given
item_list = ['Apple Pie', 'Chicken Pie', 'Apple Tart', 'Egg Tart', 'Durian Tart']
price_list = [1.80, 2.90, 0.85, 0.95, 1.10]
qty_list = [3, 5, 9, 12, 30]

#Part (b) - calculate the total cost of the purchases
total_cost = 0
i = 0
while i < len(item_list):
    item_cost = price_list[i] * qty_list[i]
    total_cost += item_cost
    i = i + 1

print('Total cose of purchse: ${:.2f}'.format(total_cost))

#Part (c) - display only the tarts purchased
print('{:15s}{:12s}{:8s}'.format('Item', 'Unit Price', 'Quantity'))
print('{:15s}{:12s}{:8s}'.format('====', '==========', '========'))

i = 0
while i < len(item_list):
    if item_list[i].find('Tart') >= 0:
        print('{:15s}${:<11.2f}{:<15d}'.format(item_list[i], price_list[i], qty_list[i]))
    i = i + 1



#2018 Q4

#Part (b) - check that input x is between 1 and 100 (inclusive)
invalid = True
while invalid:
    x = int(input('Enter a number between 1 and 100: '))
    if x < 1 or x > 100:
        continue
    else:
        invalid = False

#Part (a) - Display numbers 1-100 in ascending order,
#replacing all numbers divisible by num with “skip”.
i = 1
while i <= 100:
    if i % x == 0:
```

```
    print ('{:>5s}'.format('skip'))
  else:
    print ('{:>5d}'.format(i))
  i = i + 1
```