#1

total\_cost=float(input('What is the total cost of your dream home?'))

annual\_salary=float(input('What is your annual salary?'))

portion\_saved=float(input('What portion of your salary are you saving?'))

current\_savings=0

num\_months=0

r=.04

savings\_needed = total\_cost \* .25

while current\_savings <= savings\_needed:

num\_months += 1

current\_savings=current\_savings + (annual\_salary\*portion\_saved + current\_savings\*r)/12

print ('It will take ', num\_months, 'months to save for your down payment')

#2

portion\_down\_payment=float(.25)

current\_savings = float(0)

annual\_salary=float(input('What is your annual salary?'))

portion\_saved=float(input('What percentage will you save each motn (as a decimal)?'))

total\_cost=float(input('What is the cost of your dream home?'))

semi\_annual\_raise =float(input('What is your semi-annual raise?'))

savings\_needed=portion\_down\_payment \* total\_cost

num\_months=0

while current\_savings < savings\_needed:

if num\_months!=0:

if 0==(num\_months) % 6:

annual\_salary= annual\_salary \* (1+ semi\_annual\_raise)

num\_months += 1

current\_savings = annual\_salary \* portion\_saved / 12 + current\_savings \* (1+.04/12)

print('It will take you ', num\_months, 'months to save enough for your dream home')

#3

portion\_down\_payment=float(.25)

current\_savings = float(0)

base\_salary=float(input('What is your annual salary?'))

portion\_saved=5000

save\_max=10000

save\_min=0

total\_cost=1000000

semi\_annual\_raise =.07

savings\_needed=portion\_down\_payment \* total\_cost

num\_months=0

savings\_diff=500

bisection\_steps = 0

while abs(savings\_diff) > 100:

annual\_salary=base\_salary

current\_savings=0

for i in range (36):

if num\_months!=0:

if 0==(num\_months) % 6:

annual\_salary= annual\_salary \* (1+ semi\_annual\_raise)

num\_months += 1

current\_savings = annual\_salary \* portion\_saved /10000 / 12 + current\_savings \* (1+.04/12)

savings\_diff= current\_savings-savings\_needed

abs\_savings\_diff = abs(savings\_diff)

if savings\_diff < 0:

old\_portion\_saved=portion\_saved

portion\_saved = int((portion\_saved+save\_max)/2)

save\_min=old\_portion\_saved

elif savings\_diff > 0:

old\_portion\_saved=portion\_saved

portion\_saved = int((portion\_saved+save\_min)/2)

save\_max=old\_portion\_saved

bisection\_steps += 1

if 10000 - portion\_saved < 1.1:

print ('You cannot save enough in 36 Months')

break

if abs(savings\_diff)<100:

print('Your optimal savings rate is ', portion\_saved/100, '%')

print('bisection\_steps ', bisection\_steps)