ASSIGNMENT 1

1.

```
spb = 7 //seconds per birth
spd = 13 //seconds per death
spi = 35 //seconds per immigrant
currpop = 303357970 //current population
secinyr = 365*24*60*60 //seconds in a year
newpop = currpop + (secinyr/spb) //add new borns
newpop = newpop - (secinyr/spd) //minus deaths
newpop = newpop + (secinyr/spi) //add immigrants
print(newpop)
```

2.

```
secinday = 86400 //seconds in a day
secinmin = 60 //seconds in a minute
secinhr = 3600 //seconds in an hour
x = input("Enter number of seconds")
while x < 0 or x > 86400
        x = input("The number of seconds should be between 0 and 86400")
H = x / secinhr //number of hours
x = x % secinhr //remaining seconds
M = x / secinmin //number of minutes
x = x % secinmin //remaining seconds
S = x //number of seconds
output("The time is H hours, M minutes, and S seconds")
```

3.

```
fahrenheit = input("Enter the temperature in fahrenheit")
celsius = (fahrenheit - 32) * (5/9)
output("fahrenheit F is celsius C")
```

4.

```
x = input("Enter a number between 1 and 10")
while x < 1 or x > 10
        output("The number does not lie between 1 and 10")
        x = input("Enter a number between 1 and 10")
output(x)
```

5.

```
mileage = input("Enter the miles per gallon of your car")
while mileage < 0
        output("Mileage cannot be negative. Enter a valid number.")
        mileage = input("Enter the miles per gallon of your car")
if mileage > 30
        output("Nice job")
else if mileage >= 15
        output("Not great, but okay.")
else
        output("So bad, so very, very bad")
```

6.

```
output("Welcome to the Dark Age.")
output("You are the head of the Round Table, Sir X.")
output("Your kingdom is in peril and everyone is looking to you to save the world.")
```

```
choice = 1
while choice != 0
        output("What do you want to do?")
        output("Pick a number corresponding to your action.")
        output("0 - Go Home?")
        output("1 - Fight the Dragon?")
        output("2 - Save the Princess?")
        choice = input()
        if choice == 0
                output("Wimp.")
                exit loop
        else if choice == 1
                output("You win!")
        else if choice == 2
                output("You saved the princess")
        else
                output("Your choice does not make sense.")
```

7.

```
mapsize = 10
map[mapsize][mapsize]
white = 0
blue = 1
green = 2
black = 3
yellow = 5
rx = 0, ry = 0 //robot's inital pos
```

```
while map[rx][ry] != yellow
        if map[rx][ry] == white
                move forward //assume predefined
        if map[rx][ry] == blue
                turn left //assume predefined
                move forward
        if map[rx][ry] == green
                turn right //assume predefined
                move forward
        if map[rx][ry] == black
                turn right
                turn right
                move forward
                move forward //moves back 2 steps
```