DIT University Dehradun

Department of Computer Science & Engineering

Subject: DOTNET Technologies (CS205) **Semester:** 4th (CSE-A, B, C, D) **Session:** 2019-20 EVEN

Assignment (Subject: DOTNET)

Assignment Uploaded on LMS Moodle dated:12 March 2020 **Submission Date:** **19-March-2020 THU**

Problem 1

Write a program that simulates a bouncing ball by computing its height in feet at each second as time passes on a simulated clock. At time zero, the ball begins at height zero and has an initial velocity supplied by the user. (An initial velocity of at least 100 feet per second is a good choice.) After each second, change the height by adding the current velocity; then subtract 32 from the velocity. If the new height is less than zero, multiply both the height and the velocity by -0.5 to simulate the bounce. Stop at the fifth bounce. The output from your program should have the following form:

```
Enter the initial velocity of the ball: 100
Time: 0 Height: 0.0
Time: 1 Height: 100.0
Time: 2 Height: 168.0
Time: 3 Height: 204.0
Time: 4 Height: 208.0
Time: 5 Height: 180.0
Time: 6 Height: 120.0
Time: 7 Height: 28.0
Bounce!
Time: 8 Height: 48.0
. . .
```

Problem 3

Suppose we can buy a chocolate bar from the vending machine for $1 each. Inside every chocolate bar is a coupon. We can redeem six coupons for one chocolate bar from the machine. This means that once you have started buying chocolate bars from the machine, you always have some coupons. We would like to know how many chocolate bars can be eaten if we start with N dollars and always redeem coupons if we have enough for an additional chocolate bar.

For example, with 6 dollars we could consume 7 chocolate bars after purchasing 6 bars giving us 6 coupons and then redeeming the 6 coupons for one bar. This would leave us with one extra coupon. For 11 dollars, we could have consumed 13 chocolate bars and still have one coupon left. For 12 dollars, we could have consumed 14 chocolate bars and have two coupons left.

Write a program that inputs a value for N and outputs how many chocolate bars we can eat and how many coupons we would have left over. Use a loop that continues to redeem coupons as long as there are enough to get at least one chocolate bar.

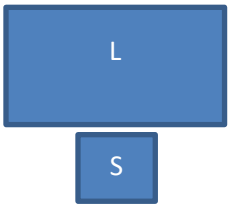
Problem 4

A furniture manufacturer produces two sizes of boxes (large, small) that are used to make either a table or a chair. A Table is prepared with one large and one small box. A chair is prepared with one large and two small boxes. Give a solution to the manufacturer company that by what number it needs to be manufactured for maximum profit. If profit on 1 table is $3 and on 1 chair is $5.
(based on Linear equation y=ax+b, or ax+by=c)

Large Box

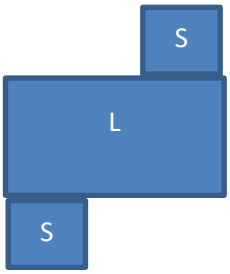
Small box

A **Table** required 1 small and 1 large box to Prepared.



A table design

A **chair** required 1 large and 2 small boxes to prepare.



A chair design

Case 1: Number of Boxes for Large=12, small = 12
Case 2: Number of Boxes for Large = 12, small=20
Case 3: Number of Boxes for Large = 12, small=25