SOFTWARE PROJECT MANAGEMENT
TUTORIAL LETTER 202
FOR
INF3708

ASSIGNMENT 02 SOLUTIONS

Assignment 02: Due date 27 March 2015 Compulsory

Unique nr: 594117
Marks weight: 20%

ASSIGNMENT 02 - SEMESTER 1

ASSIGNMENT 02	
Due date	27 March 2015
Study material	Hughes & Cotterell: Chapters 2
Total marks	32 marks = 100%
If your assignment is late, please DO NOT PHONE OR E-MAIL asking for an extension but include a note in your assignment stating the reason for the late submission and we will decide whether or not it will be marked.	

Instructions:

1. Complete this assignment and submit online in a .pdf format by performing the calculations.

2. The following unique number has to be assigned to the assignment:

UNIQUE NUMBER:
594117

3. Show all your working (calculations).

4. This assignment consists of 5 questions.

QUESTIONS AND ANSWERS FOR ASSIGNMENT 02:

The cash flows of Projects 1, 2 and 3 is given in the table below (in ZAR, South African rand, R):

Year	Project 1	Project 2	Project 3
0	- R 175 000	- R 150 000	- R 300 000
1	+ R 15 000	+ R 5000	+ R 30 000
2	+ R 20 000	+ R 15 000	+ R 30 000
3	+ R 50 000	+ R 20 000	+ R 50 000
4	+ R 50 000	+ R 30 000	+ R 120 000
5	+ R 50 000	+ R 60 000	+ R 120 000
6	+ R 50 000	+ R 90 000	+ R 120 000

Table of cash flows for Project 1, 2 and 3

Use this information to calculate the **Net Profit**, the **Return on Investment** (ROI), the **payback period** and the **Net Present Value** at 10% for **each** of these projects. Then answer Questions 1 – 5.

1. Calculate the Net Profit for each project. (6 marks)

Answer: (2 marks @ project for correct answers)

Year	Project 1	Project 2	Project 3
0	- R 175 000	- R 150 000	- R 300 000
1	+ R 15 000	+ R 5000	+ R 30 000
2	+ R 20 000	+ R 15 000	+ R 30 000
3	+ R 50 000	+ R 20 000	+ R 50 000
4	+ R 50 000	+ R 30 000	+ R 120 000
5	+ R 50 000	+ R 60 000	+ R 120 000
6	+ R 50 000	+ R 90 000	+ R 120 000
Net Profit	**Project 1: R60000**	**Project 2: R70000**	**Project 3: R170000**

2. Calculate the Return on Investment for each project. (6 marks)

Answer: (2 marks @ project for correct answers; calculations must be shown)

Return on Investment for projects 1, 2 & 3 respectively (rounded to 2 decimal places):

Return on Investment: **Average Annual Profit x 100** **Total Investment (value at year 0)**	**5,71%**	**7,78%**	**9,44%**

Project 1 = ((60 000/6)/175 000)*100 = **5.71%**

Project 2 = ((70 000/6)/150 000)*100 = **7.78%**

Project 3 = ((170 000/6)/300 000)*100 = **9.44%**

3. Calculate the Payback Period for each project. (6 marks)

Answer: (2 marks @ project for correct answers)

Project 1
Payback period = breakeven year – (profit made in breakeven year/ income in breakeven year)
= 5-(10 000/ 50 000)
= **4.8 years**
Project 2
Payback period = breakeven year – (profit made in breakeven year/ income in breakeven year)
= 6-(70 000/ 90 000)
= **5.2 years**
Project 3
Payback period = breakeven year – (profit made in breakeven year/ income in breakeven year)
= 5-(50 000/ 120 000)
= **4.6 years**

4. Calculate the Net Present Value for each project. (12 marks)

Answer: (4 marks @ project for correct answers; calculations must be shown to earn full marks) – it is advisable that you use the discount factor table provided in the prescribed textbook. Such discount factor table will be provided in exams in case a question on Net Present value is asked.

Year	Discount factor @ 10%	Project 1	Project 1 Discounted Cash flow (Rand)	Project 2	Project 2 Discounted Cash flow (Rand)	Project 3	Project 3 Discounted Cash flow (Rand)
0	1,0000	-R 175 000	-R 175 000,00	-R 150 000	-R 150 000,00	-R 300 000	-R 300 000,00
1	0,9091	R 15 000	R 13 636,50	R 5 000	R 4 545,50	R 30 000	R 27 273,00
2	0,8264	R 20 000	R 16 528,00	R 15 000	R 12 396,00	R 30 000	R 24 792,00
3	0,7513	R 50 000	R 37 565,00	R 20 000	R 15 026,00	R 50 000	R 37 565,00
4	0,6830	R 50 000	R 34 150,00	R 30 000	R 20 490,00	R 120 000	R 81 960,00
5	0,6209	R 50 000	R 31 045,00	R 60 000	R 37 254,00	R 120 000	R 74 508,00
6	0,5645	R 50 000	R 28 225,00	R 90 000	R 50 805,00	R 120 000	R 67 740,00
NPV (Rand)			-R 13 850,50		-R 9 483,50		R 13 838,00

Illustrations:

Project 1

Net Present Value = -175 000*1 + 15 000*0.9091 + 20 000*0.8264 + 50 000*0.7513 + 50 000*0.6830 + 50 000*0.6209 + 50 000*0.5645

= -175 000 + 13636.5 + 16528 + 37565 +34150 +31045 +28225
= -**R13850.5**

Project 2

Net Present Value = -150 000*1 + 5000*0.9091 + 15 000*0.8264 + 20 000*0.7513 + 30 000*0.6830 + 60 000*0.6209 + 90 000*0.5645

= -150 000 + 4545.5 + 12396 + 15026 +20490 +37254 + 50805
= **-R9483.5**

Project 3

Net Present Value = -300 000*1 + 30 000*0.9091 + 30 000*0.8264 + 50 000*0.7513 + 120 000*0.6830 + 120 000*0.6209 + 120 000*0.5645

= -300 000 + 27273 + 24792 + 37565 + 81960 +74508 +67740
= **R13838**

5. Based on your calculation of the individual NPV of each project in question 4 above, which project would you select to develop? (2 marks)

Answer:
Project 3: positive/highest NPV