

## Final Exam

### **PROBLEM #1:** (15 points from 34) (25 points from 54)

Income of a project over a 15-year period is given in the table below.

Year	End of Year Payment
0	900
1	320
2	320
3	320
4	320
5	600
6	320
7	320
8	520
9	320
10	320
11	320
12	320
13	320
14	320
15	320

For the interest rate of 7% compounded annually, plot the cash flow diagram and perform the following steps for the project:

1. Calculate the present worth of the project using formulas for factors.
2. Calculate the present worth of the project using tables for factors and compare with answer in in part 2. Explain the reason for difference, if any.
3. Calculate future worth of the project at the end of year 15 using tables.
4. Calculate future worth of the project at the end of year 10 using the calculated value in part 3.
5. Calculate the equivalent annual payment of the project over 15 years.

**PROBLEM #2:** (15 points from 34) (20 points from 54)

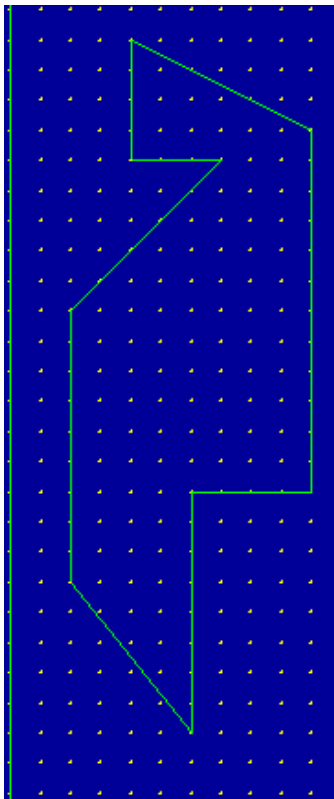
1. Using Notepad, write a html document with the following design:

Background color: no red + very little green + lots of blue but not full blue

Text: Click on any shape to go to a different web site.

Image: blue shape.gif located at the subdirectory images of where the html file is located. The distance between any two yellow dots is 5 pixels.

The general shape of the image is:



2. You have a circle that you need to map it using MAP tag in a html document. You can use rectangular and polygon tags but not circle shape attribute. How do you achieve your goal?

3. You have two rectangles that are intersecting (like a + sign) and you want to map them. What is the main problem? How do you solve it?

**PROBLEM #3:** (4 points from 34) (9 points from 54)

Write a complete C++ program that uses line and block comment, prints a hello world with a question mark, asks for the user to enter an integer number and prints that integer number again all on different lines.

7%						
Compound Interest Factors						
<i>n</i>	Single Payment		Uniform Payment Series			
	Compound Amount Factor Find <i>F</i> Given <i>P</i> <i>F/P</i>	Present Worth Factor Find <i>P</i> Given <i>F</i> <i>P/F</i>	Sinking Fund Factor Find <i>A</i> Given <i>F</i> <i>A/F</i>	Capital Recovery Factor Find <i>A</i> Given <i>P</i> <i>A/P</i>	Compound Amount Factor Find <i>F</i> Given <i>A</i> <i>F/A</i>	Present Worth Factor Find <i>P</i> Given <i>A</i> <i>P/A</i>
1	1.070	.9346	1.0000	1.0700	1.000	0.935
2	1.145	.8734	.4831	.5531	2.070	1.808
3	1.225	.8163	.3111	.3811	3.215	2.624
4	1.311	.7629	.2252	.2952	4.440	3.387
5	1.403	.7130	.1739	.2439	5.751	4.100
6	1.501	.6663	.1398	.2098	7.153	4.767
7	1.606	.6227	.1156	.1856	8.654	5.389
8	1.718	.5820	.0975	.1675	10.260	5.971
9	1.838	.5439	.0835	.1535	11.978	6.515
10	1.967	.5083	.0724	.1424	13.816	7.024
11	2.105	.4751	.0634	.1334	15.784	7.499
12	2.252	.4440	.0559	.1259	17.888	7.943
13	2.410	.4150	.0497	.1197	20.141	8.358
14	2.579	.3878	.0443	.1143	22.551	8.745
15	2.759	.3624	.0398	.1098	25.129	9.108
16	2.952	.3387	.0359	.1059	27.888	9.447
17	3.159	.3166	.0324	.1024	30.840	9.763
18	3.380	.2959	.0294	.0994	33.999	10.059
19	3.617	.2765	.0268	.0968	37.379	10.336
20	3.870	.2584	.0244	.0944	40.996	10.594

**Simple Interest:**Interest earned on amount  $P$ :  $I = Pin$ Maturity value:  $F = P(1 + in)$  $i$  = interest rate per time period $n$  = number of time periods**Compound Interest:** $F = P(1 + i)^n$  $F$  = future value $P$  = present value $i$  = periodic interest rate $n$  = number of periods**Ordinary Simple Annuity:**

$$P = A \left[ \frac{1 - (1 + i)^{-n}}{i} \right]$$

$$F = A \left[ \frac{(1 + i)^n - 1}{i} \right]$$

 $A$  = periodic payment (end of period) $P, F, i, n$  as above for compound interest

