Daffodil International University
Department of Computer Science and Engineering
Faculty of Science and Information Technology
Final Examination   SPRING 2018

Course Code: CSE214   Course Title: Object Oriented Programming
Level : 2   Term: 1   Section: ALL
Instructor: ALL

Full Marks: 40

Time: 2hrs

12+15

PART-A: Problem Visualization

Alice and Bob, close friends, went to a shopping mall "Agora". Alice and Bob is Human and every human has height and weight. Alice has Toyota which is a Car and Bob has RoadShow which is a Cycle. Both Car and Cycle is a Vehicle. Every vehicle has price. Both the Toyota and RoadShow uses Drive interface which provide start and stop services. Alice drives his Toyota and Bob cylles her RoadShow. As they are good friends, they always run at the same speed.
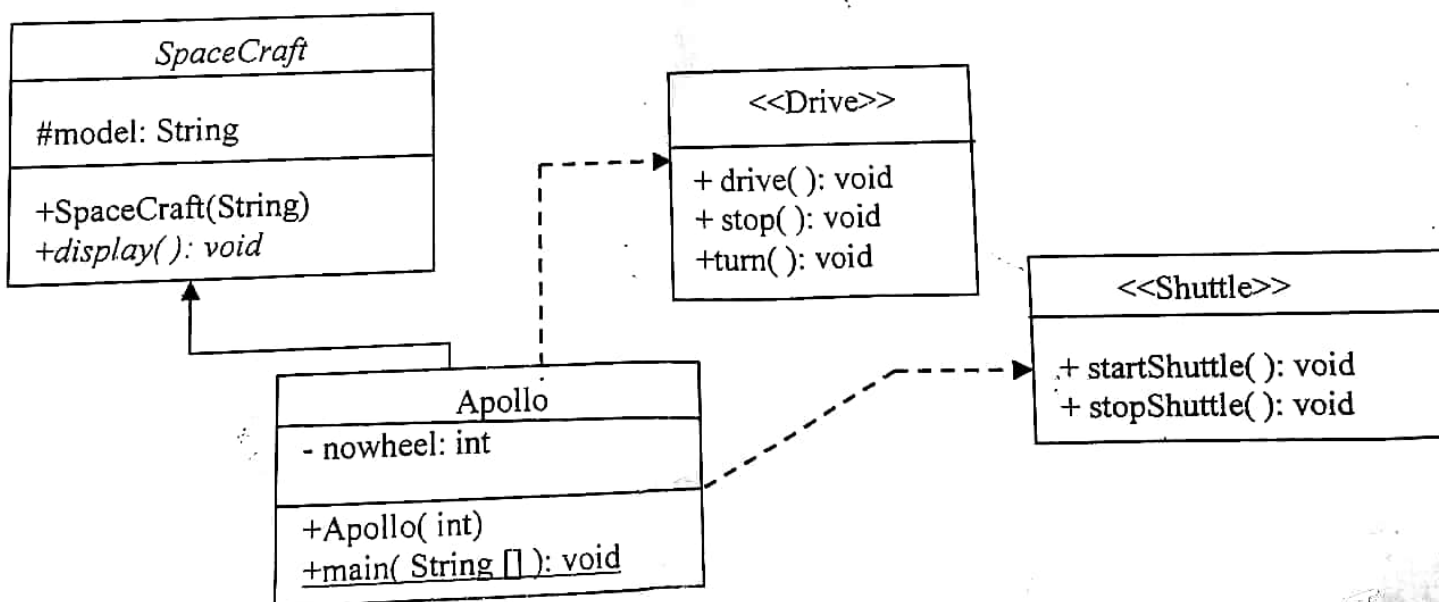
From the above story of Alice and Bob, answer the following:
- a.   Design a class diagram that represents the above scenario
- b.   Write Java code to implement your proposed model

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PART-B: Code Writing from UML Modeling

Implement the following UML model of an OO system using Java. Create necessary objects in main and demonstrate all method calls.

------------- Good Luck ---------------------

Daffodil International University
Department of Computer Science and Engineering
Faculty of Science and Information Technology
Final Examination, Semester: Spring-2018
Course Code: GED 201, Course Title: Bangladesh Studies
Level & Term: L2T1, Section: All, Course Teacher: All

Full Marks: 40

Time: 2 Hours

Part-A

[1X6=06]

1. **Determine whether the following statements are true or false:**
   a. Fiscal year of Bangladesh starts from June 1.
   b. ICT policy of Bangladesh was formally adopted in 2009.
   c. Acid rain is occurred due to mixture of CO_2 with cloud water.
   d. Syed Nazrul Islam was the finance minister of Mujibnagar Govt.
   e. First *Shaheed Minar* was established at the University of Dhaka in 1952.
   f. Comilla Model was a pioneer model to develop the urban area of Bangladesh.

[2X5=10]

2. **Answer the following questions:**
   a. Write down the first and last points of six-point program of 1966.
   b. List-out the demands made by the Rastrabhasa Sangram Parishad.
   c. Identify any four major weaknesses of ICT industry in Bangladesh.
   d. Mention the names of major budgetary decision-making institutions in Bangladesh.
   e. Write down the full form of these abbreviations: (i) SDG; (ii) NGO; (iii) COP; (iv) ECNEC

Part-B

Answer any three (03) from the following questions:

[8X3=24]

3. Narrate the nature of the economy of Bangladesh & evaluate the recent development trends of it.
4. "Climate change is the consequence of human actions rather than natural changes."- express your opinion on this statement.
5. Highlight the positive impacts of urbanization. Apply the push-pull model of migration on rural-urban migration happening in Bangladesh.
6. "The creation of Bangladesh was the result of various discriminations against the people of East Pakistan."- explain the statement with reference.

Daffodil International University
Department of Computer Science and Engineering
Faculty of Science & Information Technology
Semester Final Examination, Semester: Spring 2018
Course Code: CSE 212, Course Title: Digital Electronics
Section: All, Course Teachers: All

Time: 2.0 hours   Marks: 40

There are <u>5(Five)</u> questions carrying <u>10(Ten)</u> marks each. Answer any 4(Four) questions. Marks allotted are indicated in the right margin.

No.	Question Description	Marks

1.   a. Construct a 4:2 priority encoder circuit with proper truth table.   [5.0]

   b. Construct a (5 X 32) decoder using (3 X 8) decoder and (2 X 4) decoder.   [5.0]

2.   a. Implement the following equation using active low decoder.   [5.0]
   $F1 (m,n,p)= \sum (D1,D2,D4,D7)$
   $F2 (m,n,p)= \sum (D3,D5,D6,D7)$

   b. Suppose there are two numbers X and Y. Construct a Circuit that produces the BCD   [5.0]
   summation of two these numbers. Describe your answer with proper truth tables and show
   that this circuit computes X+Y where X=1011 and Y=1000.

3.   a. Implement the following function with a multiplexer: [5.0]
   $$F(W, X, Y, Z) = \sum (0, 3, 6, 7, 9, 13, 15)$$
   b. Use the K-Map to minimize the folowing function: [5.0]
   $$F(M, N, O, P)= \sum (0,1,3,5,9,12) + \sum d (2,4,6,7)$$

4.   a. Determine the output states for this Clocked S-R Flip-Flops, given the pulse inputs show: [3.0]
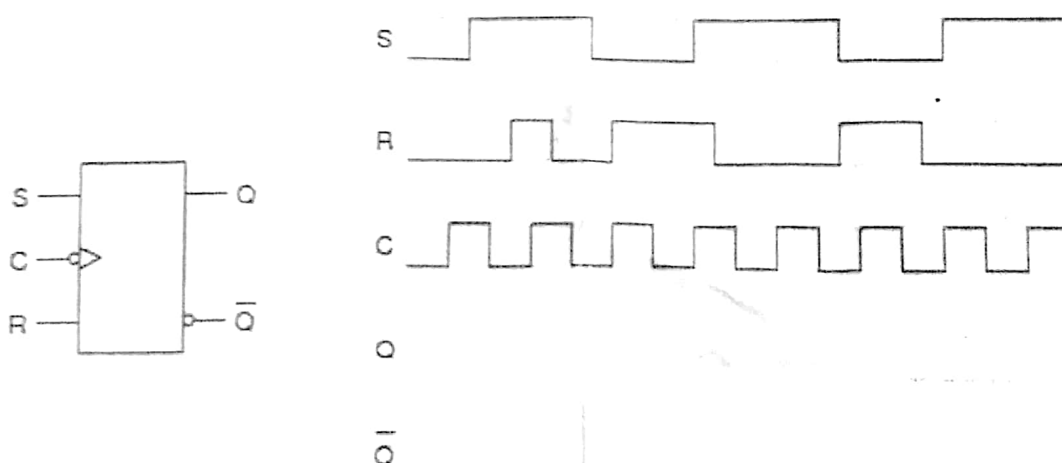
   b. Explain working principle of master-slave JK flip-flop with necessary logic diagram,   [4.0]
   state equation and state diagram.

   c. Implement D flip flop using JK flip flop.   [3.0]

International University

Final Examination of Spring 2018
Department of Computer Science and Engineering
Faculty of Science and Information Technology

Course Title: Engineering Mathematics   Course Code: **MAT 211**
Credits: 03   Sections: ALL   Course Teacher: **ALL**

Time : 2 Hours   Marks : 40

Answer any **Four** of the following questions

1. (a) Define *Fourier Series*. [2]
   (b) Find the Fourier Series of $F(x) = x^2$, $\ -\pi \preceq x \preceq \pi$. [4]
   (c) Expand, $F(x) = \cos mx, m > 0, \ 0 \preceq x \preceq \pi$ in a half range Fourier sine Series. [4]

2. (a) Define *Inverse Finite Fourier Sine transform*. [2]
   (b) Find the Fourier Sine transform of $F(x) = \sin kx$, $k > 0$, $0 \preceq x \preceq \pi$. [3]
   (c) For the function $F(x) = e^{mx}$, $\ m > 0$, $0 \preceq x \preceq \pi$. [5]
   Show that
   $$f_s(n) + f_c(n) = \frac{m-n}{m^2+n^2}\left[e^{m\pi}\cos n\pi - 1\right].$$

3. (a) Define *Inverse Infinite Fourier Cosine Transform*. [2]
   (b) Find the Fourier Cosine Transform of $F(x) = 2e^{-5x} + 5e^{-2x}$, $0 \preceq x \prec \infty$. [4]
   (c) Find the Complex Fourier Transform of $F(x) = e^{-a|x|}$, $a > 0$. [4]

4. (a) State Heat Equations in $1D, 2D$ and $3D$. [2]
   (b) Solve the following Equation by using appropriate Fourier Transform [8]
   $$\frac{\partial U}{\partial t} = 2\frac{\partial^2 U}{\partial x^2};$$
   $$U(0,t) = 0;$$
   $$U(x,0) = \begin{cases} 0, & 1 \leq x \\ 1, & 0 < x < 1 \end{cases}; \quad U(x,t) \text{ is unbounded.}$$
   $$0 \preceq x, \ t > 0.$$

5. (a) Define *Polar form of a Complex Number* and find the polar form of $\sqrt{3} - 3i$; [2]
   (b) Geometrically describe the set of points z satisfying $|z + 3i| \geq 4$. [4]
   (c) Prove that $\frac{\sin 5\theta}{\sin \theta} = 16\cos^4\theta - 12\cos^2\theta + 1$; if $\theta \neq 0, \pm\pi, \pm 2\pi, \ldots$ [4]

6. (a) Express $\left(\frac{1-\sqrt{3}i}{1+\sqrt{3}i}\right)^{15}$ in a $A+iB$ form. [2]
   (b) Determine whether $u = e^x(x\cos y - y \sin y)$ is harmonic or not. [4]
   (c) State Cauchy's Integral Formula. Using this formula [4]
   evaluate $\int_C \frac{z}{(9-z^2)(z+i)}dz$ where $C : |z| = 2$.

Best of Luck !