11.	Draw a ball, filled with default color. Move the ball from top to bottom of the window continuously with its color changed for every one second. The new color of the ball for the next second should be obtained by adding 20 to the current value of Red component, for the second time by adding 20 to the blue component, and for the third time by adding 20 to the blue component, till all reach the final limit 225, after which the process should be repeated with the default color. Low Level: Implement only the ball movement without the color change. Medium Level: Implement the scenario described above. High Level: Draw another ball in a different frame and implement the horizontal movement of the ball.
12.	Develop a TCP based client-server application to notify the client about the integrity of data sent from its side. Assume the data to have been sent in a single array by the client. Check sum calculation: 1. Add the 16-bit values up. Each time a carry-out (17th bit) is produced, swing that bit around and add it back into the LSB (one's digit). 2. Once all the values are added in this manner, invert all the bits in the result. For example, separate the data into groups of 4 bits only for readability. 1000 0110 0101 1110 1010 1100 0110 0000 0111 0001 0010 1010 First, add the 16-bit values 2 at a time: 1000 0110 0101 1110 First 16-bit value + 1010 1100 0110 0000 Second 16-bit value ---------- 1 0011 0010 1011 1110 Produced a carry-out, which gets added + \----------> 1 back into LSB ---------- 0011 0010 1011 1111 + 0111 0001 0010 1010 Third 16-bit value ---------- 0 1010 0011 1110 1001 No carry to swing around (**) Then take the one's complement of the sum which is 0101 1100 0001 0110, the "one's complement". So the checksum stored in the header should be 0101 1100 0001 0110 Low Level: Perform TCP based client-server communication. Medium Level: Ensure that the server establishes connection with multiple clients and communicate with them simultaneously. High Level: Implement UDP/IP communication protocol to exchange the data and its checksum between the client and the server.
13.	Develop an RMI application to invoke a remote method that takes two numbers and returns 1 if one number is an exact multiple of the other and 0 otherwise. Eg., 5 and 25 -> true 26 and 13 -> true 4 and 18 -> false

	Low Level: Invoke the remote method from the client side to know if one number is an exact multiple of the other. Medium Level: Pass references of two Student objects from the client to the server and the server should return 0 – if the two objects are identical 1 – if the two references point to the same Student object -1 - if the two objects are different High Level: Invoke the remote method from multiple clients.
14.	a)Assume two cookies are created whenever a VIT student visits the VIT webpage-one for his/her name and the other for his campus. For subsequent visits, he/she should be greeted with the message similar to the one below "Hi Ajay from Chennai Campus!!". Write a servlet program to do the needful. b)Build an application using JSF framework to implement a Celsius to Fahrenheit converter. Note: Fahrenheit=(Celsius*9/5)+32 Low Level: Use cookies to track the client information and display as mentioned. Medium Level: Also display the time when he visited the web site at last. High Level: Use HttpSession interface to achieve a similar effect
15.	Using Hibernate framework, simulate the course registration process for Advanced Java Programming. Let the registration number and name of the students who register for the course, be stored in a database. The tool should allow deletion of the registered course for a particular student, if he/she wishes. At any instant, the list of students who have registered for the course should be displayed, if requested for. Low Level: Implement the above said operations. Middle Level: Another table stores the registration number and name of the students who have registered for 'Data Mining'. Display the registration number and names of those students who have registered for both Java and Data Mining. High Level: Modify your code appropriately to connect to a different database server to retrieve information from the two tables stored in that database.