**3.34 Rewrite the following if statements using the conditional operator**

|  |
| --- |
| if (ages >= 16)  ticketPrice = 20;  else  ticketPrice = 10; |

ANS:

|  |
| --- |
| TicketPrice=(ages>=16)?20:10; |

**3.35 Rewrite the following conditional expressions using if-else statements.**

a. score = (x > 10) ? 3 \* scale : 4 \* scale;

b. tax = (income > 10000) ? income \* 0.2 : income \* 0.17 + 1000;

c. System.out.println((number % 3 == 0) ? i : j);

ANS:

|  |
| --- |
| 1. If (x > 10){   score = 3 \* scale ;  }else{  score = 4 \* scale;  } |
| 1. If (income > 10000){   income = income \* 0.2;  }else{  income = income \* 0.17 + 1000;  } |
| 1. if(number % 3 == 0){   System.out.println (I);  }else{  System.out.println (J);  } |

|  |
| --- |
| scissor (0), rock (1), paper (2): 1 The computer is scissor. You are rock. You won  scissor (0), rock (1), paper (2): 2 The computer is paper. You are paper too. It is a draw  Programming |

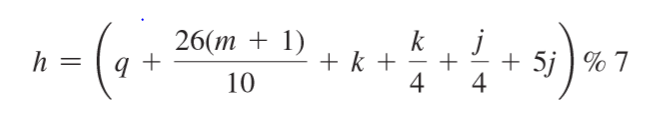
**\*3.17 (Game: scissor, rock, paper) Write a program that plays the popular scissor-rock-paper game.** (A scissor can cut a paper, a rock can knock a scissor, and a paper can wrap a rock.) The program randomly generates a number 0, 1, or 2 representing scissor, rock, and paper. The program prompts the user to enter a number 0, 1, or 2 and displays a message indicating whether the user or the computer wins, loses, or draws. Here are sample runs:

ANS:

|  |
| --- |
| package scissorrockpapergame;  import java.util.\*;  public class ScissorRockPaperGame {  public static void main(String[] args) {  Scanner input = new Scanner(System.in);  int computer = (int)(Math.random()\*3);  System.out.print("scissor(0),rock(1),paper(2): ");  int player = input.nextInt();  switch (computer){  case 0 : System.out.print("The computer is scissor. ");break;  case 1 : System.out.print("The computer is rock. ");break;  case 2 : System.out.print("The computer is paper. ");break;  }  switch(player){  case 0 : if(computer == 2){  System.out.print("You are Scessor. You win\n");  }else{  if(computer == 1){  System.out.print("You are Scessor. You lose\n");  }else{  System.out.print("You are Scessor too. It is a draw\n");  }};break;  case 1 : if(computer == 0){  System.out.print("You are rock. You win\n");  }else{  if(computer == 2){  System.out.print("You are rock. You lose\n");  }else{  System.out.print("You are rock too. It is a draw\n");  }};break;  case 2 : if(computer == 1){  System.out.print("You are paper. You win\n");  }else{  if(computer == 0){  System.out.print("You are paper. You lose\n");  }else{  System.out.print("You are paper too. It is a draw\n");  }};break;  }  }  } |

**\*\*3.21 (Science: day of the week) Zeller’s congruence is an algorithm developed by Christian Zeller to calculate the day of the week.**

The formula is:



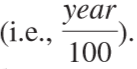
where

■ h is the day of the week (0: Saturday, 1: Sunday, 2: Monday, 3: Tuesday, 4: Wednesday, 5: Thursday, 6: Friday).

■ q is the day of the month.

■ m is the month (3: March, 4: April, …, 12: December). January and February are counted as months 13 and 14 of the previous year.

■ j is the century



■ k is the year of the century (i.e., year % 100).

Note that the division in the formula performs an integer division. Write a program that prompts the user to enter a year, month, and day of the month, and displays the name of the day of the week. Here are some sample runs:

|  |
| --- |
| Enter year: (e.g., 2012): 2015  Enter month: 1-12: 1  Enter the day of the month: 1-31: 25  Day of the week is Sunday |

|  |
| --- |
| Enter year: (e.g., 2012): 2012  Enter month: 1-12: 5  Enter the day of the month: 1-31: 12  Day of the week is Saturday |

(Hint: January and February are counted as 13 and 14 in the formula, so you need to convert the user input 1 to 13 and 2 to 14 for the month and change the year to the previous year.)

ANS:

|  |
| --- |
| package dayoftheweek;  import java.util.\*;  public class DayOfTheWeek {  static void main(String[] args) {  Scanner input = new Scanner(System.in);  int h,q,m,j,k,year;  System.out.print("Enter year: (e.g., 2012): ");  year = input.nextInt();  System.out.print("Enter month: 1-12: ");  m = input.nextInt();  System.out.print("Enter the day of the month: 1-31: ");  q = input.nextInt();  if(m == 1 || m == 2){  m = m + 12;  year = year - 1;  }  j = (year/100);  k = (year % 100);  h = (q+(26\*(m+1)/10)+k+(k/4)+(j/4)+(5\*j))%7;  switch(h){  case 0 : System.out.print("Day of the week is Saturday");break;  case 1 : System.out.print("Day of the week is Sunday");break;  case 2 : System.out.print("Day of the week is Monday");break;  case 3 : System.out.print("Day of the week is Tuesday");break;  case 4 : System.out.print("Day of the week is Wendensday");break;  case 5 : System.out.print("Day of the week is Thursday");break;  case 6 : System.out.print("Day of the week is Friday");break;  }  }    } |

**\*3.33 (Financial: compare costs) Suppose you shop for rice in two different packages. You would like to write a program to compare the cost.** The program prompts the user to enter the weight and price of each package and displays the one with the better price.

Here is a sample run:

|  |
| --- |
| Enter weight and price for package 1: 50 24.59  Enter weight and price for package 2: 25 11.99  Package 2 has a better price. |

ANS:

|  |
| --- |
| package comparecost;  import java.util.\*;  public class CompareCost {  public static void main(String[] args) {  Scanner input = new Scanner(System.in);  double weight1,price1,weight2,price2,betterPrice;  System.out.print("Enter weight and price for package 1: ");  weight1 = input.nextDouble();  price1 = input.nextDouble();  System.out.print("Enter weight and price for package 2: ");  weight2 = input.nextDouble();  price2 = input.nextDouble();  if(price1 > price2){  System.out.println("Package 2 has a better price.");  }else{  System.out.println("Package 1 has a better price.");  }  }  } |