**CS120 Fundamental of Programming**

**Homework 4: Logical Operators and Decision Structure**

**Homework Assignments**

1. The unit for electricity usage is kWh. For domestic usage, the monthly rate is 21.8 cents/unit for the first 200 unit, 25.8 cents/unit for the next 800 units and 27.8 cents/unit for each additional unit. Given the amount of electricity units (in kWh) used by a customer, write a program that will calculate and print the amount of money needs to be paid by the customer.

#include <stdio.h>

int main()

{

int units;

float payment;

printf("Enter the amount of electricity consumed : ");

scanf("%d", &units);

if ( units > 1000 )

{

payment = 200 \* 21.8;

payment = payment + 800\*25.8;

payment = payment + (units-1000)\*27.8;

}

else if ( units > 200 )

{

payment = 200 \* 21.8;

payment = payment + (units-200)\*25.8;

}

else

{

payment = units \* 21.8;

}

printf("Bill for %d units is : %.2f\n", units, payment);

system("pause");

return 0;

}

1. Write a program that inputs two numbers and an arithmetic operator (\*, /, +, –) from user. It performs arithmetic operation if operator is a valid arithmetic operator. Display the results of arithmetic operations for addition, subtraction, multiplication, division and remainder operators. Hint: use switch and case structure to perform the relevant operation.

#include <stdio.h>

int main()

{

int n1, n2;

char op;

printf("Enter two numbers : ");

scanf("%d%d", &n1, &n2);

printf("Enter an operator (\*, /, +, -): ");

scanf("%c", &op);

scanf("%c", &op);

switch (op)

{

case '\*':

printf("%d %c %d = %d\n", n1, op, n2, n1\*n2);

break;

case '/':

printf("%d %c %d = %f\n", n1, op, n2, (float)n1/n2);

break;

case '+':

printf("%d %c %d = %d\n", n1, op, n2, n1+n2);

break;

case '-':

printf("%d %c %d = %d\n", n1, op, n2, n1-n2);

break;

}

system("pause");

return 0;

}

1. Write a program to input student’s scores for five subjects, calculate the average score and find the relevant grade based on average score. The grade is assigned as per following scheme.

A – 91-100

B – 81-90

C – 71-80

D – 61-70

F – 0-60

#include <stdio.h>

int main()

{

float m1, m2, m3, m4, m5, avg;

printf("Enter marks for 5 subjects : ");

scanf("%f%f%f%f%f", &m1, &m2, &m3, &m4, &m5);

avg = (m1+m2+m3+m4+m5)/5.0;

printf("%f\n", avg);

if ( avg >= 0 && avg <= 60 )

printf("Grade F\n");

else if ( avg >= 61 && avg <= 70 )

printf("Grade D\n");

else if ( avg >= 71 && avg <= 80 )

printf("Grade C\n");

else if ( avg >= 81 && avg <= 90 )

printf("Grade B\n");

else if ( avg >= 91 && avg <= 100 )

printf("Grade A\n");

system("pause");

return 0;

}