**Day1Assignment**

**Problem 2.1**

**Determine the size,minimum and maximum value following data types. Please specify if your machine is 32 bit or 64 bits in the answer.**

* **char**
* **unsigned char**
* **short**
* **int**
* **unsigned int**
* **unsigned long**
* **float**

Machine : 64-bit

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Size (bytes) | Min | max |
| Char | 1 | -128 | 127 |
| Unsigned char | 1 | 0 | 255 |
| Short | 2 | -32768 | 32767 |
| Int | 4 | -2147483648 | 2147483647 |
| Unsigned int | 4 | 0 | 4294967295 |
| Unsigned long | 4 | 0 | 4294967295 |
| float | 4 | 1.75494e-38 | 3.402823e+38 |

**Problem 2.2**

**Write logical expressions that tests whether a given character variable c is**

* **lower case letter**

c>=’a’ && c<=’z’

* **upper case letter**

c>=’A’ && c<=’Z’

* **digit**

c>=’0’ && c<=’9’

* **white space (includes space,tab,new line)**

c==’\n’ || c==’\t’ || c==’ ‘

**Problem 2.3**

**Consider int val=0xCAFE; Write expressions using bitwise operators that do the following:**

* **test if atleast three of last four bits (LSB) are on**

int bits=val&0xF;

bits==0x7 || bits==0xB || bits>=0xD

* **reverse the byte order (i.e., produce val=0xFECA)**

val = ((0xFF & val) << 8) | (val>>8}

* **rotate fourbits (i.e., produce val=0xECAF)**

val = (val>>4) | ((val&0xF)<<12)

**Problem 2.4**

**Using precedence rules, evaluate the following expressions and determine the value of the variables(without running the code). Also rewrite them using parenthesis to make the order explicit.**

* **Assume (x=0xFF33,MASK=0xFF00).Expression: c=x & MASK ==0;**

Operater precedence is ‘==’>’&’>’=’

So expression is c=(x&(MASK==0))

X=0xFF33, c=0

* **Assume (x=10,y=2,z=2;).Expression: z=y=x++ + ++y∗2;**

Operater precedence is ‘++]>’\*’>’+’

Expression is z=(x++)+((++y)\*2)

X=11,y=3,z=16

* **Assume (x=10,y=4,z=1;).Expression: y>>= x&0x2 && z**

Operator precedence is ‘&’>’&&’>’>>=’

Expression is y>>=(x&0x2)&&z

X=10,y=2,z=1

**Problem 2.5**

**Determine if the following statements have any errors. If so, highlight them and explain why.**

* **int 2nd value=10;**

variable names cannot start with a number.

* **Assume (x=0,y=0,alliszero=1). alliszero =(x=1) && (y=0);**

The correct expression is alliszero = (x==1)&&(y==0)

* **Assume (x=10,y=3,z=0;). y=++x+y;z=z−−>x;**

The statement is correct.

* **Assume that we want to test if last four bits of x are on. (int MASK=0xF;ison=x&MASK==MASK**

The statement is correct.