

```
//      +++++ Random Number operations ( randint ) +++++
```

```
#include <limits.h>
```

```
class randint
```

```
{  
//      -----  
//      Object for generating random numbers  
//      gauss is used to draw from a normal distribution  
//      -----  
long randx;
```

```
void getx()
```

```
{ randx = randx * 1103515245 + 12345; }
```

```
public:
```

```
int e_siz;
```

```
int **e_dist;
```

```
randint( long s = 1000)
```

```
{  
randx = s;  
e_siz=0;  
//      e_dist= new int*[2];  
//      e_dist[0]= new int[ s ];  
//      e_dist[1]= new int[ s ];  
}
```

```
void seed( long s )
```

```
{ randx = s; }
```

```
long get_seed( )
```

```
{ return randx ; }
```

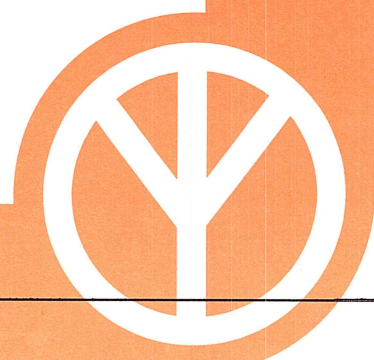
```
int draw()
```

```
{  
getx();  
return randx & LONG_MAX;  
}
```

Tel: 0141 423 1222 Fax: 0141 433 2821 e-mail: scnd@banthebomb.org

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```
pr[i] = Brode_84( x,z );
}
if( (overpressure) > pr[1] )
  r_pr[2] = r_pr[1];
else
  r_pr[0] = r_pr[1];

r_pr[1] = ( r_pr[0] + r_pr[2] ) / 2.0;
r50 = pow( yld, 0.33333 ) * r_pr[1];
}
//
//          Correlation between r50 and WR
//
wr_appx= r50/( 1.0 - sig*sig );
return( wr_appx );
}; // Block: 100
```

### **float fdraw()**

```
{
getx();
return ( randx & LONG_MAX ) / (float) LONG_MAX;
}
```

### **int exp\_dist( )**

```
{
int valu=0.0 ;
int indx2;
indx2= int( fdraw()*e_siz ) ;
valu= e_dist[ 1 ][ indx2 ] ;
//
//          Draw Without Replacement
//
for( int k=indx2; k<e_siz-1; k++ )
    e_dist[ 1 ][ k ]= e_dist[ 1 ][ k+1 ] ;
e_siz -=1;

return (valu ) ;
}
```

### **void exp\_dist\_Rep( int tmp )**

```
{
e_dist[ 1 ][ e_siz ]= tmp;
e_siz +=1;
return ;
}
```

### **void Setup\_exp\_dist( int\* hist, int siz )**

```
{
float valu=0.0 ;
e_siz= siz;
e_dist = new int*[ 2 ];
e_dist[ 0]= new int[ e_siz ];
e_dist[ 1]= new int[ e_siz ];

for( int k=0; k< siz; k++ )
    {
    e_dist[ 0 ][k] = k ;
    e_dist[ 1 ][k] = hist[ k] ;
    }
}
```

```
return ;  
}
```

### **void Cleanup\_dist( )**

```
{  
e_siz=0;  
delete e_dist;  
return;  
}; // Block: 101
```

### **void Swap( float\* a, float\* b )**

```
{  
float temp;  
temp= *a;  
*a=*b;  
*b=temp;  
return;  
}; // Block: 102
```

### **void Sort( float\* A, int sz )**

```
{  
int top, search;  
for( top=0; top<sz-1; top++ )  
for( search=top+1; search<sz; search++ )  
if( A[search] > A[top] )  
Swap( &A[search], &A[top] );  
return;  
}; // Block: 103
```

### **float gauss()**

```
{  
static int iset=0;  
static float gset;  
float fac,r,v1,v2;  
if( iset == 0 )  
{  
do  
{  
v1 = 2.0* randint::fdraw() - 1.0;  
v2 = 2.0* randint::fdraw() - 1.0;  
r = v1*v1 + v2*v2;  
}
```

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