

Advanced Programming in C++
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Handout 2 - Pointers

1. What is the output of the following program?

```
#include <stdio.h>

int main() {
    const int size = 5;
    char text[size];
    int i;

    for(i = 0; i < size; i++) {
        text[i] = 'A' + i;
        printf("%c %c\n", text[i], *(text + i) );
    }

    return 0;
}
```

2. What is the output of the following program?

```
#include <stdio.h>

struct TWord {
    char letter[3];
};

int main() {
    void *ptr = NULL;

    (char *)ptr = "ABCDEFGHJKLMNOPQRSTUVWXYZ";
    (char *)ptr += 3;
    printf( "%c\n", *(char *)ptr );

    (char *)ptr = "ABCDEFGHJKLMNOPQRSTUVWXYZ";
    (TWord *)ptr += 3;
    printf( "%c\n", *(char *)ptr );

    return 0;
}
```

3. What is the output of the following program?

```
#include <stdio.h>

int main() {
    int n = 100;
    int *ptr = &n;
    int **ptr_ptr = &ptr;

    printf( "%s\n", ((*ptr_ptr == ptr) ? "Yes" : "No") );
}
```

```

printf( "%s\n", (**ptr_ptr == n) ? "Same" : "Different" );
printf( "%s\n", (&&&ptr == ptr_ptr) ? "Sure" : "Nope" );
printf( "%s\n", (&&&ptr == n) ? "OK" : "Not OK" );

return 0;
}

```

4. What is the output of the following program?

```

#include <stdio.h>

int main() {
    int ai[7] = {10, 30, 20, 40, 60, 50};
    int *ptr1 = ai;
    int *ptr2 = NULL;
    int i;

    for( i=0 ; i<6 ; i++ ) {
        printf("%d\n", *ptr1);
        ++ptr1;
    }

    i = 0;
    ptr1 = &ai[2];
    for ( i=0 ; i<4 ; i++, ++ptr1 ) {
        if( *ptr1>=40 )
            *ptr1 = *ptr1 * 2;
        printf("%d\n", *ptr1);
    }

    ptr1 = &ai[1];
    ptr2 = ptr1 + 3;
    *ptr2 = 1000;
    printf("%d\n", ( ptr2 - ptr1 ) + 10 );
    ptr1 = (ai + 2);
    printf("%d %d\n", ai[4], ptr1[1]);

    return 0;
}

```

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