CN HW2 report

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1 Usage

"make" compiles two binary files: "sender" and "receiver". Start receiver at the target computer, and then execute sender to send the file. The file sent will be saved at the working directory of sender, which is normally the directory sender is in. Filename and file permissions are preserved during the transmission. If there already exists a file with the same name, the transmission will be terminated. Sender closes after the transmission.

2 Package Format

The size of every package varies from 9 bytes to 256 bytes. The first byte of the package equals the size of the package−1, that is, 8 bytes + the size of the content. After this byte is a 4-byte unsigned integer sequence number followed by a 4-byte unsigned int crc32 checksum. The rest are the actual data that we want to transfer, whose length can be from 1 byte to 247 bytes.

Entry name	Size(bytes)	Type	Meaning
Package size	1	unsigned char	size of the package (this entry not counted)
Sequence number	4	unsigned integer	sequence number of the package or ACK
Checksum	4	unsigned integer	the crc32 checksum of the whole package when this entry is zero
Data	$1 \sim 247$	anytype	The data that we want to transfer

When the package is an ACK, an ACK char is put in the data field, so the data field is never empty.

3 Receiver and Sender FSM

4 Loss and error solving

4.1 Package loss solving

Nice question.

4.2 Package error solving

There is a checksum in every package sent. For every package received, the program checks if the checksum in the package is the same as calculated after transmission. If the two values differ, the package is corrupted and hence ignored.

5 Extra work